F 9

```
LLL                 IIIIIIIII     NNN         NNN  KKK         KKK  EEEEEEEEEEEEEEE  RRRRRRRRRRRR
LLL                 IIIIIIIII     NNN         NNN  KKK         KKK  EEEEEEEEEEEEEEE  RRRRRRRRRRRR
LLL                 IIIIIIIII     NNN         NNN  KKK         KKK  EEEEEEEEEEEEEEE  RRRRRRRRRRRR
LLL                    III        NNN         NNN  KKK         KKK  EEE              RRR         RRR
LLL                    III        NNN         NNN  KKK         KKK  EEE              RRR         RRR
LLL                    III        NNN         NNN  KKK         KKK  EEE              RRR         RRR
LLL                    III        NNNNNN      NNN  KKK      KKK     EEE              RRR         RRR
LLL                    III        NNNNNN      NNN  KKK      KKK     EEE              RRR         RRR
LLL                    III        NNNNNN      NNN  KKK      KKK     EEE              RRR         RRR
LLL                    III        NNN   NNN   NNN  KKKKKKKKK        EEEEEEEEEEEE     RRRRRRRRRRRR
LLL                    III        NNN   NNN   NNN  KKKKKKKKK        EEEEEEEEEEEE     RRRRRRRRRRRR
LLL                    III        NNN   NNN   NNN  KKKKKKKKK        EEEEEEEEEEEE     RRRRRRRRRRRR
LLL                    III        NNN      NNNNNN  KKK      KKK     EEE              RRR   RRR
LLL                    III        NNN      NNNNNN  KKK      KKK     EEE              RRR   RRR
LLL                    III        NNN      NNNNNN  KKK      KKK     EEE              RRR   RRR
LLL                    III        NNN         NNN  KKK         KKK  EEE              RRR      RRR
LLL                    III        NNN         NNN  KKK         KKK  EEE              RRR      RRR
LLL                    III        NNN         NNN  KKK         KKK  EEE              RRR      RRR
LLLLLLLLLLLLLLL     IIIIIIIII     NNN         NNN  KKK         KKK  EEEEEEEEEEEEEEE  RRR         RRR
LLLLLLLLLLLLLLL     IIIIIIIII     NNN         NNN  KKK         KKK  EEEEEEEEEEEEEEE  RRR         RRR
LLLLLLLLLLLLLLL     IIIIIIIII     NNN         NNN  KKK         KKK  EEEEEEEEEEEEEEE  RRR         RRR
```

```
**FILE**ID**LNKSYMOUT                                D 12


LL          NN      NN  KK      KK    SSSSSSSS  YY      YY  MM      MM    OOOOOO    UU      UU  TTTTTTTTTT
LL          NN      NN  KK      KK    SSSSSSSS  YY      YY  MM      MM    OOOOOO    UU      UU  TTTTTTTTTT
LL          NN      NN  KK      KK  SS          YY      YY  MMMM  MMMM  OO      OO  UU      UU      TT
LL          NN      NN  KK      KK  SS          YY      YY  MMMM  MMMM  OO      OO  UU      UU      TT
LL          NNNN    NN  KK    KK    SS            YY  YY    MM  MM  MM  OO      OO  UU      UU      TT
LL          NNNN    NN  KK    KK    SS            YY  YY    MM  MM  MM  OO      OO  UU      UU      TT
LL          NN  NN  NN  KKKKKK        SSSSSS        YY      MM      MM  OO      OO  UU      UU      TT
LL          NN  NN  NN  KKKKKK        SSSSSS        YY      MM      MM  OO      OO  UU      UU      TT
LL          NN    NNNN  KK    KK            SS      YY      MM      MM  OO      OO  UU      UU      TT
LL          NN    NNNN  KK    KK            SS      YY      MM      MM  OO      OO  UU      UU      TT
LL          NN      NN  KK      KK          SS      YY      MM      MM  OO      OO  UU      UU      TT
LL          NN      NN  KK      KK          SS      YY      MM      MM  OO      OO  UU      UU      TT        ....
LLLLLLLLLL  NN      NN  KK      KK  SSSSSSSS        YY      MM      MM    OOOOOO    UUUUUUUUUU      TT        ....
LLLLLLLLLL  NN      NN  KK      KK  SSSSSSSS        YY      MM      MM    OOOOOO    UUUUUUUUUU      TT        ....

LL            IIIIII      SSSSSSSS
LL            IIIIII      SSSSSSSS
LL              II      SS
LL              II      SS
LL              II      SS
LL              II      SS
LL              II        SSSSSS
LL              II        SSSSSS
LL              II              SS
LL              II              SS
LL              II              SS
LL              II              SS
LLLLLLLLLL    IIIIII    SSSSSSSS
LLLLLLLLLL    IIIIII    SSSSSSSS
```

```
0 module lnk_symtblout                          ! LINKER GLOBAL SYMBOL OUTPUT ROUTINES
0               (ident = 'V04-000'
0               ,addressing_mode
0                       (external    = general
0                       ,nonexternal = long_relative
0                       )
0               ) =
1 begin
1
1 !
1 !****************************************************************************
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1 !****************************************************************************
1 !
1
1 !++
1 ! FACILITY:     LINKER
1 !
1 ! ABSTRACT:     THIS MODULE CONTAINS ALL LOGIC TO OUTPUT THE GLOBAL
1 !               SYMBOLS OF THE LINK TO SYMBOL TABLE FILE AND/OR IMAGE FILE
1 !
1 !
1 ! ENVIRONMENT:  VMS NATIVE MODE
1 !
1 ! AUTHOR:       T.J. PORTER, CREATION DATE: 14-JUL-77
1 !
1 ! MODIFIED BY:
1 !
1 !       V03-023 ADE0005         Alan D. Eldridge        23-Aug-1984
1 !               Prevent symbols from being written twice to the symbol table
1 !               by flushing the symbols before writing the PSECT record.
1 !
1 !       V03-022 ADE0004         Alan D. Eldridge        10-Jul-1984
1 !               Fix module name selection when the image name is null but there
1 !               is no .STB requested.
1 !
1 !       V03-021 ADE0003         Alan D. Eldridge        22-Jun-1984
1 !               Adhere to Grammer Rules for output file spec's as defined
```

```
1 !             in the Command Language User's Guide.
1 !
1 !     V03-020 ADE0002         Alan D. Eldridge        1-May-1984
1 !             Fix bug which resulted in zero-lenghted module name in .STB
1 !             by using the .STB name if the image name is null.
1 !
1 !     V03-019 ADE0001         Alan D. Eldridge        12-Apr-1984
1 !             Use 'output file parsing' only if /SYM was not an
1 !             input file qualifier.
1 !
1 !     V03-018 JWT0134         Jim Teague              29-Aug-1983
1 !             Undo JWT0129.  NOSHR psects in shr img sym tbls are
1 !             good for forcing a CRF section.
1 !
1 !     V03-017 JWT0129         Jim Teague              28-Jul-1983
1 !             Psect selection for inclusion in shareable image
1 !             symbol tables was neglecting to check the SHR bit.
1 !
1 !     V03-016 JWT0113         Jim Teague              20-Apr-1983
1 !             Call $getjpi to get number of open files left.
1 !
1 !     V03-015 JWT0053         Jim Teague              15-Sep-1982
1 !             Fix bug which caused linker to skip writing some
1 !             symbols to shr imgs.
1 !
1 !     V03-014 JWT0044         Jim Teague              30-Jul-1982
1 !             Open file performance boost.
1 !
1 !     V03-013 JWT0038         Jim Teague              23-Jun-1982
1 !             Clean up INFO#212 errors.
1 !
1 !--
```

```
1 !
1 ! TABLE OF CONTENTS:
1 !
1
1 forward routine
1         eomrecout,                                              ! OUTPUT END OF MODULE
1         hdrecsout,                                              ! OUTPUT HEADER RECORDS
1         outputpsects,                                           ! TRAVERSE PSECT LIST TO OUTPUT PSECTS
1         psectrecout,                                            ! OUTPUT P-SECT RECORDS
1         symrecout,                                              ! OUTPUT SYMBOL RECORDS
1         lnk$closymout : novalue,                                ! CLOSE SYMBOL TABLES
1         stbrecout,                                              ! WRITE RECORD TO STB FILE
1         imgrecout,                                              ! WRITE RECORD TO IMAGE FILE
1         outputrec;                                              ! WRITE THE RECORDS
1
1 !
1 ! INCLUDE FILES:
1 !
1 library
1         'LIBL32';                                       ! SYSTEM STRUCTURES
1 require
1         'PREFIX';                                       ! USEFUL MACROS ETC.
1 library
1         'DATBAS';                                       ! DATA BASE DEFINITIONS
1 !
1 ! MACROS:
1 !
1
1 !
1 ! EQUATED SYMBOLS:
1 !
1
1 literal
1         maxsymbolrec = 512;                                     ! MAX LENGTH OF SYMBOL RECORD
1 !
1 ! EXTERNAL REFERENCES:
1 !
1 external literal
1         lin$_closeout,                                          ! CLOSE FAILURE
1         lin$_faofail,                                           ! FAO FAILURE
1         lin$_openout,                                           ! ERROR OPENING OUTPUT FILE
1         lin$_writeerr,                                          ! WRITE ERROR
1         lnk$c_objmbc            : short;                        ! MULTI-BLOCK COUNT
1 !
1 external
1         lnk$gt_jpilst,
1         lnk$gl_filesleft,
1         lnk$gt_imgid            : vector[,byte],                ! IMAGE IDENT
1         lnk$gl_pshrnum,                                         ! NUMBER OF HIGHEST PSECT CREATED
1         lnk$gl_clulst           : vector[2],                    ! CLUSTER DESCRIPTOR LISTHEAD
1         lnk$gl_inrelnam,                                        ! POINTER TO FIRST INPUT FILE NAM BLOCK
1         lnk$gl_relnam_sym,                                      ! POINTER TO /SYM RELATED NAME BLOCK
1         lnk$gb_locnov_sym       : byte,                         ! SET IF /SYM WAS 'LOCAL' WITHOUT A VALUE
1         lnk$al_imgrab           : block[,byte],                 ! OPEN IMAGE FILE RAB
1         lnk$al_rab              : block[,byte],                 ! OBJECT RAB
1         lnk$gb_maxercod         : byte,                         ! MAXIMUM ERROR CODE
1         lnk$gb_pass             : byte,                         ! PASS NUMBER
```

```
                lnk$gl_ctlmsk           : block[,byte],         ! CONTROL MASK
                lnk$gl_imgfil           : ref block[,byte],     ! IMAGE FILE D.B.
                lnk$gl_symfil           : ref block[,byte],     ! SYMBOL TABLE FILE
                lnk$gw_imgifi           : word,                 ! IMAGE FILE IFI
                lnk$gl_maplst,                                  ! LISTHEAD FOR USEFUL P-SECTIONS
                lnk$gl_minva,                                   ! LOWEST VIRTUAL ADDRESS ALLOCATED
                lnk$gw_nsymbols         : word,                 ! NUMBER OF GLOBAL SYMBOLS
                lnk$gq_startim,                                 ! START TIME/DATE
                lnk$aw_version          : block[,byte];         ! LINKER VERSION

        external routine
                lnk$closefile           : novalue,              ! ROUTINE TO CLOSE A FILE
                lib$traverse_tree,                              ! TRAVERSE A BINARY TREE
                lnk$filnamdsc,                                  ! GET FILE NAME FROM FAB
                lnk$closimgfil;                                 ! CLOSES IMAGE FILE
        !
        ! MODULE OWN STORAGE:
        !
        global
                lnk$gw_gstrecs          : word,                 ! COUNT OF RECORDS WRITTEN TO IMAGE GST
                lnk$gw_symrecs          : word;                 ! COUNT OF RECORDS WRITTEN STB FILE
        own
                eomcodes : vector [4, byte]                     ! TRANSLATE EXIT CODES
                        initial (byte (eom$c_warning            !  INTO EOM STATUS CODES
                                        ,eom$c_success
                                        ,eom$c_error
                                        ,eom$c_abort
                                    )  ),
                stbauxfnb       : ref block [,byte],            ! POINTER TO AUX. FNB. OF SYMBOL TABLE FILE
                stbrab          : $rab (rac=seq, mbc=lnk$c_objmbc), ! RECORD ACCESS BLOCK OF SYMBOL TABLE FILE
                symask          : word initial (sym$m_supres),
                symatch,
                stbfileifi,                                     ! INTERNAL FILE ID OF SYMBOL TABLE FILE
                imgauxfnb       : ref block[,byte],             ! POINTER TO AUX, FNB, OF OPEN IMAGE FILE
                gsdreclng       : word,                         ! LENGTH OF CURRENT GSD RECORD
                curpsectnum     : byte,                         ! NUMBER OF CURRENT P-SECTION
                objrecord       : ref block [,byte];            ! POINTER TO OBJECT RECORD

        bind
                objrecvec = objrecord : ref vector [,byte];     ! POINT TO OBJECT RECORD AS BYTE VECTOR

        psect   own = $plit$;                                   ! DEFINE READ ONLY STORAGE
        own
                abspsect : block[psc$c_size+9,byte]             ! FOR THE GENERATED ABSOLUTE P-SECTION
                        initial (long(0,0),word(0),
                                word ( gps$m_pic or             ! IT IS POSITION INDEPENDENT
                                        gps$m_rd or             ! READABLE
                                        gps$m_lib),             ! AND A "LIBRARY" P-SECTION
                                long (0,0,0,0,0,0,0),
                                long (0),
                                byte (0),
                                countedstring ('.$$ABS$$.')); ! NAMED ".$$ABS$$."
        !
        psect   own = $own$;
```

```
1 global routine lnk$symtblout : novalue =
1 !++
1 ! FUNCTIONAL DESCRIPTION:
1 !
1 !       THIS ROUTINE OUTPUTS THE GLOBAL SYMBOLS OF THE LINK.
1 !       THERE ARE THREE REASONS FOR GLOBAL SYMBOL OUTPUT:
1 !
1 !       1.  THE DEBUGGER HAS BEEN LINKED INTO AN EXECUTABLE
1 !           IMAGE.
1 !
1 !       2.  THE IMAGE IS A SHAREABLE IMAGE.
1 !
1 !       3.  A SEPARATE OUTPUT FILE OF GLOBAL SYMBOLS WAS
1 !           REQUESTED BY THE LINK COMMAND.
1 !
1 !       1 AND 2 ARE MUTUALLY EXCLUSIVE, WHEREAS THE THIRD
1 !       MAY ACCOMPANY EITHER. IN CASES 1 AND 2 THE GLOBAL SYMBOLS
1 !       ARE OUTPUT TO THE END OF THE IMAGE FILE. IN ALL CASES,
1 !       THE SYMBOL TABLE OUTPUT CONFORMS TO THE OBJECT LANGUAGE
1 !       FORMAT. I.E. VARIABLE LENGTH RECORDS.
1 !       THERE IS SOME FILTERING OF SYMBOLS AND P-SECTIONS
1 !       ARE OUTPUT:
1 !
1 !       1.  NO WEAKLY DEFINED SYMBOLS
1 !
1 !       2.  SYMBOLS FROM THE DEBUGGER ITSELF AND FROM SYSTEM
1 !           LIBRARIES ARE SUPPRESSED IN ACCORDANCE WITH
1 !           THE LINK COMMAND GIVEN.
1 !
1 ! FORMAL PARAMETERS:
1 !
1 !       NONE
1 !
1 ! IMPLICIT INPUTS:
1 !
1 !       THE IMAGE FILE IS OPEN AND DESCRIPTORS OF IMAGE FILE
1 !       AND SYMBOL TABLE FILE ARE IN DYNAMIC MEMORY.
1 !
1 ! IMPLICIT OUTPUTS:
1 !
1 !       SYMBOLS AND P-SECTIONS (AS REQUIRED) ARE WRITTEN TO
1 !       THE (APPROPRIATE) FILE(S) AND IF TO AN IMAGE,
1 !       THE IMAGE HEADER IS UPDATED WITH A POINTER TO
1 !       THE SYMBOL TABLE PATITION OF THE FILE.
1 !
1 ! ROUTINE VALUE:
1 !
1 ! COMPLETION CODES:
1 !
1 !       NONE
1 !
1 ! SIDE EFFECTS:
1 !
1 !       NONE
1 !
1 !--
2 begin
```

```
  2 local
            rmserror,                                                       ! RMS ERROR CODE RETURNED
            stvcode,                                                        ! RMS STV CODE RETURNED
            fablock   : block [fab$c_bln,byte],                             ! FILE ACCESS BLOCK
            psectdesc : ref block [,byte];                                  ! POINTER TO P-SECT DESCRIPTOR
  2 !
  4 if (.lnk$gl_ctlmsk and (lnk$m_shr or lnk$m_dbg or                      ! IF A SHAREABLE IMAGE
                            lnk$m_symtbl)) eql 0                           ! OR DEBUGGER WITH EXECUTABLE IMAGE
  2 then return;                                                            ! OR A SYMBOL TABLE FILE WAS REQUESTED
  2
  2 objrecord = .lnk$al_rab [rab$l_ubf];                                    ! INITIALIZE OUTPUT BUFFER TO BE THE
  2                                                                         ! ONE USED FOR INPUT RECORDS CROSSING BLOCKS
P 2 $fab_init (fab = fablock                                                ! INITIALIZE THE FAB
P 2           ,fop = put
P 2           ,rfm = var
P 2           ,mrs = maxsymbolrec
  2           );
  2
  2 if .lnk$gl_ctlmsk [lnk$v_symtbl]                                        !
  3 then    begin                                                           ! IF A SYMBOL TABLE, BUILD
  3         stbauxfnb            =  lnk$gl_symfil [fdb$t_auxfnb];           ! A FILE ACCESS BLOCK TO
  3         fablock [fab$l_fna] = .lnk$gl_symfil [fdb$l_usrnamadr];         ! WITH USER SPECIFIED OR
  3         fablock [fab$b_fns] = .lnk$gl_symfil [fdb$w_usrnamlen];         ! COMMAND LANGUAGE DEFAULTED
  4         fablock [fab$b_dns] =  (if .lnk$gb_locnov_sym
  4                                  then %charcount ('.STB')
  4                                  else %charcount ('SYS$DISK:[].STB')
  3                                 );
  4         fablock [fab$l_dna] =  (if .lnk$gb_locnov_sym
  4                                  then uplit (byte ('.STB'))
  4                                  else uplit (byte ('SYS$DISK:[].STB'))
  3                                 );
  3         fablock [fab$l_nam] = .stbauxfnb;                               !
  3         fablock [fab$l_alq] = .lnk$gw_nsymbols/20;                      ! SET INITIAL ALLOCATION
  3         stbrab  [rab$l_fab] =  fablock;                                 !
  3
  3         if  .lnk$gb_locnov_sym                                          ! DON'T USE 'OUTPUT FILE PARSING'
  3         then fablock [fab$v_ofp] = false                                ! IF /SYM WAS A LOCAL QUALIFIER
  3         else fablock [fab$v_ofp] = true ;                               ! WITHOUT  A SPECIFED VALUE
  3
  3         stbauxfnb [nam$l_rlf] = .lnk$gl_relnam_sym ;                    ! SET RELATED NAM BLOCK ADDRESS
  3
  4         if not  ($getjpi (itmlst = lnk$gt_jpilst);
  4                 if .lnk$gl_filesleft leq 3
  4                 then
  4                    lnk$closefile ();                                    !   THEN CLOSE A FILE
  4                 rmserror = $create (fab=fablock);                       !   AND TRY AGAIN
  4                 stvcode  = .fablock [fab$l_stv];
  4                 ch$move (dsc$c_s_bln, lnk$filnamdsc (fablock)           ! SET RESULTANT NAME DESCRIPTOR
  4                        ,lnk$gl_symfil [fdb$q_filename]
  4                        );
  4                 .rmserror
  4                 )
  4         or not  (rmserror = $connect (rab=stbrab);                      ! RECORD STREAM AND
  4                 stvcode = .stbrab [rab$l_stv];
  4                 .rmserror
  4                 )
  4         then begin                                                      ! IF ANY FAILURE REPORT
```

```
4                  signal (lin$_openout,1, lnk$gl_symfil [fdb$q_filename]      ! IT
4                          ,.rmserror,.stvcode
4                          );
6                  if (.lnk$gl_ctlmsk and (lnk$m_shr or lnk$m_dbg or           ! THEN IF THERE IS
4                                          lnk$m_image)) eql 0                  ! NOTHING ELSE TO DO
4                  then return;                                                 ! EXIT NOW.
4                  end
4              else begin
4                  stbfileifi          = .fablock [fab$w_ifi];                  ! SAVE IFI IF CREATED OK
4                  stbrab [rab$l_rbf] = .objrecord;                             ! SET RECORD BUFFER ADDRESS
3                  end;
2          end;
2      !
2      ! IF A SHAREABLE IMAGE OR A DEBUGGER HAS BEEN LINKED IN, AND THE
2      ! IMAGE FILE EXISTS (I.E. IT IS STILL OPEN), CHANGE ITS ATTRIBUTES
2      ! SO THAT VARIABLE LENGTH RECORDS MAY BE WRITTEN TO THE END OF
2      ! IT.
2      !
2      if (.lnk$gl_ctlmsk and (lnk$m_shr or lnk$m_dbg)) neq 0                  ! SHAREABLE OR DEBUGGABLE
2      and .lnk$gl_ctlmsk [lnk$v_image] neq 0                                   ! IMAGE WHICH HAS BEEN
3      then begin                                                               ! CREATED SUCCESSFULLY
3              imgauxfnb               = lnk$gl_imgfil [fdb$t_auxfnb];          ! (AND IS STILL OPEN). JAM
3              fablock [fab$w_ifi]     = .lnk$gw_imgifi;                        ! IFI, SET FOR BOTH BLOCK
3              fablock [fab$v_bro]     = true;                                  ! AND RECORD I/O
3              fablock [fab$v_esc]     = true;                                  ! AND FOR VARIABLE
3              fablock [fab$l_ctx]     = rme$c_setrfm;                          ! LENGTH RECORDS
3              lnk$al_imgrab [rab$l_fab] = fablock;                             ! SET FAB POINTER IN RAB
3              lnk$al_imgrab [rab$v_eof] = true;                                ! AND END OF FILE OPTION
3
4              if not  (rmserror = $modify (fab = fablock);                     ! AND TELL RMS ABOUT IT
4                       stvcode  = .fablock[fab$l_stv];
4                       .rmserror
4                      )
4              or not  (rmserror = $connect (rab=lnk$al_imgrab);
4                       stvcode = .lnk$al_imgrab [rab$l_stv];
4                       .rmserror
4                      )
4              then begin
4                  signal (lin$_openout,1,lnk$gl_imgfil [fdb$q_filename]
4                          ,.rmserror, .stvcode
4                          );
4                  lnk$closymout (.imgauxfnb);                                  ! THEN CLOSE THE FILE
4                  if .stbfileifi eql 0                                         ! IF NO OTHER SYMBOL
4                  then return;                                                 ! TABLE FILE, EXIT
4                  end                                                          ! HERE NOW
4              else begin
4                  lnk$al_imgrab [rab$b_mbc] = lnk$c_objmbc;          ! SET MULTI-BLOCK COUNT
4                  lnk$al_imgrab [rab$l_rbf] = .objrecord;                      ! SET RECORD BUFFER ADDRESS
3                  end;
3          end
2      else if .stbfileifi eql 0 then return;                                   ! GIVE UP IF NOTHING TO DO
2      !                                                                        ! ADDRESS (USING OBJ INPUT BUFFER)
2      if not hdrecsout ()                                                      ! OUTPUT HEADER RECORDS
2      then return;                                                             ! AND GIVE UP ON FAILURE
2      !
2      if not psectrecout (abspsect)                                            ! OUTPUT THE ABSOLUTE P-SECTION
2      then return;                                                             ! GIVING UP ON FAILURE
```

```
2 !
2 ! OUTPUT THE PSECTS
2 !
2 outputpsects ();
2 !
2 ! ALL SYMBOLS AND P-SECTIONS ARE PROCESSED. WRITE AN
2 ! END OF MODULE RECORD THEN CLOSE THE FILE(S).
2 !
2 if not eomrecout ()                                               ! GIVE UP ON EOM RECORD
2 then return;                                                      ! OUTPUT ERROR
2 lnk$closymout (0);                                                ! AND CLOSE FILE(S)
2 return;
1 end;                                                              ! AND ALL DONE


                                                                   .TITLE  LNK_SYMTBLOUT
                                                                   .IDENT  \V04-000\

                                                                   .PSECT  $PLITS,NOWRT,NOEXE,2

                                    00000000  00000000  00000 ABSPSECT:
                                                                   .LONG   0, 0                                    ;
                                                  0000  00008      .WORD   0                                       ;
                                                  0083  0000A      .WORD   131                                     ;
00000000  00000000  00000000  00000000  00000000  00000000  0000C      .LONG   0, 0, 0, 0, 0, 0, 0                     ;
                                              00000000  00024                                                      ;
                                              00000000  00028      .LONG   0                                       ;
                                                    00  0002C      .BYTE   0                                       ;
                                                    09  0002D      .BYTE   9                                       ;
                        2E  24  24  53  42  41  24  24  2E  0002E      .ASCII  \.$$ABS$$.\                             ;
                                                        00037      .BLKB   1
                                        42  54  53  2E  00038 P.AAA:  .ASCII  \.STB\
42  54  53  2E  5D  5B  3A  4B  53  49  44  24  53  59  53  0003C P.AAB:  .ASCII  \SYS$DISK:[].STB\                ;

                                                                   .PSECT  $OWN$,NOEXE,2

                                        03  02  00  01  00000 EOMCODES:
                                                                   .BYTE   1, 0, 2, 3                              ;
                                                        00004 STBAUXFNB:
                                                                   .BLKB   4
                                                    01  00008 STBRAB:  .BYTE   1                                   ;
                                                    44  00009      .BYTE   68                                      ;
                                                  0000  0000A      .WORD   0                                       ;
                                              00000000  0000C      .LONG   0                                       ;
                                              00000000  00010      .LONG   0                                       ;
                                              00000000  00014      .LONG   0                                       ;
                                                 0000#  00018      .WORD   0[3]                                    ;
                                                  0000  0001E      .WORD   0                                       ;
                                              00000000  00020      .LONG   0                                       ;
                                                  0000  00024      .WORD   0                                       ;
                                                    00  00026      .BYTE   0                                       ;
                                                    00  00027      .BYTE   0                                       ;
                                                  0000  00028      .WORD   0                                       ;
                                                  0000  0002A      .WORD   0                                       ;
                                              00000000  0002C      .LONG   0                                       ;
                                              00000000  00030      .LONG   0                                       ;
                                              00000000  00034      .LONG   0                                       ;
```

```
                              00000000  00038             .LONG    0                                               ;
                                    00  0003C             .BYTE    0                                               ;
                                    00  0003D             .BYTE    0                                               ;
                                    00  0003E             .BYTE    0                                               ;
                                   00G  0003F             .BYTE    LNK$C_OBJMBC                                    ;
                              00000000  00040             .LONG    0                                               ;
                              00000000  00044             .LONG    0                                               ;
                              00000000  00048             .LONG    0                                               ;
                                  2000  0004C SYMASK:     .WORD    8192                                            ;
                                        0004E             .BLKB    2
                                        00050 SYMATCH:    .BLKB    4
                                        00054 STBFILEIFI:
                                                          .BLKB    4
                                        00058 IMGAUXFNB:
                                                          .BLKB    4
                                        0005C GSDRECLNG:
                                                          .BLKB    2
                                        0005E CURPSECTNUM:
                                                          .BLKB    1
                                        0005F             .BLKB    1
                                        00060 OBJRECORD:
                                                          .BLKB    4

                                                          .PSECT   $GLOBAL$,NOEXE,2

                                        00000 LNK$GW_GSTRECS::
                                                          .BLKB    2
                                        00002 LNK$GW_SYMRECS::
                                                          .BLKB    2

                                              OBJRECVEC=           OBJRECORD
                                                          .EXTRN   LIN$_CLOSEOUT, LIN$_FAOFAIL
                                                          .EXTRN   LIN$_OPENOUT, LIN$_WRITEERR
                                                          .EXTRN   LNK$C_OBJMBC, LNK$GT_JPILST
                                                          .EXTRN   LNK$GL_FILESLEFT
                                                          .EXTRN   LNK$GT_IMGID, LNK$GL_PSHRNUM
                                                          .EXTRN   LNK$GL_CLULST, LNK$GL_INRELNAM
                                                          .EXTRN   LNK$GL_RELNAM_SYM
                                                          .EXTRN   LNK$GB_LOCNOV_SYM
                                                          .EXTRN   LNK$AL_IMGRAB, LNK$AL_RAB
                                                          .EXTRN   LNK$GB_MAXERCOD
                                                          .EXTRN   LNK$GB_PASS, LNK$GL_CTLMSK
                                                          .EXTRN   LNK$GL_IMGFIL, LNK$GL_SYMFIL
                                                          .EXTRN   LNK$GW_IMGIFI, LNK$GL_MAPLST
                                                          .EXTRN   LNK$GL_MINVA, LNK$GW_NSYMBOLS
                                                          .EXTRN   LNK$GQ_STARTIM, LNK$AW_VERSION
                                                          .EXTRN   LNK$CLOSEFILE, LIB$TRAVERSE_TREE
                                                          .EXTRN   LNK$FILNAMDSC, LNK$CLOSIMGFIL
                                                          .EXTRN   SYS$GETJPI, SYS$CREATE
                                                          .EXTRN   SYS$CONNECT, SYS$MODIFY

                                                          .PSECT   $CODE$,NOWRT,2

                                  0FFC  00000             .ENTRY   LNK$SYMTBLOUT, Save R2,R3,R4,R5,R6,R7,R8,-      ; 0315
                                                                   R9,R10,R11
               5B 00000000G   00   9E  00002             MOVAB    LNK$GL_SYMFIL, R11                              ;
               5A 00000000G   00   9E  00009             MOVAB    LNK$GL_CTLMSK, R10                              ;
```

```
LNK_SYMTBLOUT                                                        N 12
V04-000                                                16-Sep-1984 00:34:39   VAX-11 Bliss-32 V4.0-742                Page  10
                                                       14-Sep-1984 12:40:37   [LINKER.SRC]LNKSYMOUT.B32;1                  (3)

                                   59 00000000G 00 9E 00010       MOVAB    LNK$AL_IMGRAB+60, R9                  :
                                   58 00000000' EF 9E 00017       MOVAB    OBJRECORD, R8                         :
                                   5E        B0 AE 9E 0001E       MOVAB    -80(SP), SP                           :
                             2044  8F           6A B3 00022       BITW     LNK$GL_CTLMSK, #8260                  : 0379
                                                01 12 00027       BNEQ     1$                                    :
                                                   04 00029       RET                                            :
                                   68 00000000G 00 D0 0002A 1$:   MOVL     LNK$AL_RAB+36, OBJRECORD              : 0382
    0050   8F          00          6E           00 2C 00031       MOVC5    #0, (SP), #0, #80, $RMS_PTR           : 0388
                                                6E    00038                                                      :
                                   6E      5003 8F B0 00039       MOVW     #20483, $RMS_PTR                      :
                               04  AE           01 D0 0003E       MOVL     #1, $RMS_PTR+4                        :
                               16  AE           02 90 00042       MOVB     #2, $RMS_PTR+22                       :
                               1F  AE           02 90 00046       MOVB     #2, $RMS_PTR+31                       :
                               36  AE      0200 8F B0 0004A       MOVW     #512, $RMS_PTR+54                     :
                       03      01  AA           05 E0 00050       BBS      #5, LNK$GL_CTLMSK+1, 2$               : 0390
                                            00EF   31 00055       BRW      12$                                   :
                                   50           6B D0 00058 2$:   MOVL     LNK$GL_SYMFIL, R0                     : 0392
                               A4  A8        26 A0 9E 0005B       MOVAB    38(R0), STBAUXFNB                     :
                               2C  AE        10 A0 D0 00060       MOVL     16(R0), FABLOCK+44                    : 0393
                               34  AE        0C A0 90 00065       MOVB     12(R0), FABLOCK+52                    : 0394
                                   51 00000000G 00 9A 0006A       MOVZBL   LNK$GB_LOCNOV_SYM, R1                 : 0395
                                   05           51 E9 00071       BLBC     R1, 3$                                :
                                   50           04 D0 00074       MOVL     #4, R0                                :
                                                03 11 00077       BRB      4$                                    :
                                   50           0F D0 00079 3$:   MOVL     #15, R0                               :
                               35  AE           50 90 0007C 4$:   MOVB     R0, FABLOCK+53                        :
                                   09           51 E9 00080       BLBC     R1, 5$                                : 0399
                                   50 00000000' EF 9E 00083       MOVAB    P.AAA, R0                             : 0400
                                                07 11 0008A       BRB      6$                                    :
                                   50 00000000' EF 9E 0008C 5$:   MOVAB    P.AAB, R0                             : 0401
                               30  AE           50 D0 00093 6$:   MOVL     R0, FABLOCK+48                        : 0399
                                   50        A4 A8 D0 00097       MOVL     STBAUXFNB, R0                         : 0403
                               28  AE           50 D0 0009B       MOVL     R0, FABLOCK+40                        :
                                   52 00000000G 00 3C 0009F       MOVZWL   LNK$GW_NSYMBOLS, R2                   : 0404
                   10  AE          52           14 C7 000A6       DIVL3    #20, R2, FABLOCK+16                   :
                               E4  A8           6E 9E 000AB       MOVAB    FABLOCK, STBRAB+60                    : 0405
                                   06           51 E9 000AF       BLBC     R1, 7$                                : 0407
                               07  AE           20 8A 000B2       BICB2    #32, FABLOCK+7                        : 0408
                                                04 11 000B6       BRB      8$                                    :
                               07  AE           20 88 000B8 7$:   BISB2    #32, FABLOCK+7                        : 0409
                               10  A0 00000000G 00 D0 000BC 8$:   MOVL     LNK$GL_RELNAM_SYM, 16(R0)             : 0411
                                                7E 7C 000C4       CLRQ     -(SP)                                 : 0413
                                                7E D4 000C6       CLRL     -(SP)                                 :
                                      00000000G 00 9F 000C8       PUSHAB   LNK$GT_JPILST                         :
                                                7E 7C 000CE       CLRQ     -(SP)                                 :
                                                7E D4 000D0       CLRL     -(SP)                                 :
                         00000000G 00           07 FB 000D2       CALLS    #7, SYS$GETJPI                        :
                                   03 00000000G 00 D1 000D9       CMPL     LNK$GL_FILESLEFT, #3                  : 0414
                                                07 14 000E0       BGTR     9$                                    :
                         00000000G 00           00 FB 000E2       CALLS    #0, LNK$CLOSEFILE                     : 0416
                                                5E DD 000E9 9$:   PUSHL    SP                                    : 0417
                         00000000G 00           01 FB 000EB       CALLS    #1, SYS$CREATE                        :
                                   56           50 D0 000F2       MOVL     R0, RMSERROR                          :
                                   57        0C AE D0 000F5       MOVL     FABLOCK+12, STVCODE                   : 0418
                                                5E DD 000F9       PUSHL    SP                                    : 0419
                         00000000G 00           01 FB 000FB       CALLS    #1, LNK$FILNAMDSC                     :
                                   51           6B D0 00102       MOVL     LNK$GL_SYMFIL, R1                     : 0420
```

```
       14   A1            60                08  28  00105         MOVC3   #8, (R0), 20(R1)                             :
                          14                56  E9  0010A         BLBC    RMSERROR, 10$                                : 0422
                                        A8  A8  9F  0010D         PUSHAB  STBRAB                                       : 0424
                  00000000G  00             01  FB  00110         CALLS   #1, SYS$CONNECT                              :
                          56                50  D0  00117         MOVL    R0, RMSERROR                                 :
                          57            B4  A8  D0  0011A         MOVL    STBRAB+12, STVCODE                           : 0425
                          1D                56  E8  0011E         BLBS    RMSERROR, 11$                                : 0426
                          7E                56  7D  00121  10$:   MOVQ    RMSERROR, -(SP)                              : 0430
            7E            6B                14  C1  00124         ADDL3   #20, LNK$GL_SYMFIL, -(SP)                    : 0429
                                            01  DD  00128         PUSHL   #1                                           :
                                 00000000G  8F  DD  0012A         PUSHL   #LIN$_OPENOUT                                :
                  00000000G  00             05  FB  00130         CALLS   #5, LIB$SIGNAL                               :
                         45  8F             6A  93  00137         BITB    LNK$GL_CTLMSK, #69                           : 0433
                                            0A  12  0013B         BNEQ    12$                                          :
                                                04  0013D         RET                                                  : 0434
                         F4  A8         02  AE  3C  0013E  11$:   MOVZWL  FABLOCK+2, STBFILEIFI                        : 0437
                         D0  A8             68  D0  00143         MOVL    OBJRECORD, STBRAB+40                         : 0438
                         44  8F             6A  93  00147  12$:   BITB    LNK$GL_CTLMSK, #68                           : 0447
                                            7F  13  0014B         BEQL    15$                                          :
                          7C                6A  E9  0014D         BLBC    LNK$GL_CTLMSK, 15$                           : 0448
       F8   A8 00000000G  00                26  C1  00150         ADDL3   #38, LNK$GL_IMGFIL, IMGAUXFNB                : 0450
                          02  AE 00000000G  00  B0  00159         MOVW    LNK$GW_IMGIFI, FABLOCK+2                     : 0451
                          16  AE        40  8F  88  00161         BISB2   #64, FABLOCK+22                              : 0452
                          07  AE            08  88  00166         BISB2   #8, FABLOCK+7                                : 0453
                          18  AE            01  D0  0016A         MOVL    #1, FABLOCK+24                               : 0454
                          69                6E  9E  0016E         MOVAB   FABLOCK, LNK$AL_IMGRAB+60                    : 0455
                          C9  A9            01  88  00171         BISB2   #1, LNK$AL_IMGRAB+5                          : 0456
                                            5E  DD  00175         PUSHL   SP                                           : 0458
                  00000000G  00             01  FB  00177         CALLS   #1, SYS$MODIFY                               :
                          56                50  D0  0017E         MOVL    R0, RMSERROR                                 :
                          57            0C  AE  D0  00181         MOVL    FABLOCK+12, STVCODE                          : 0459
                          14                56  E9  00185         BLBC    RMSERROR, 13$                                : 0460
                                        C4  A9  9F  00188         PUSHAB  LNK$AL_IMGRAB                                : 0462
                  00000000G  00             01  FB  0018B         CALLS   #1, SYS$CONNECT                              :
                          56                50  D0  00192         MOVL    R0, RMSERROR                                 :
                          57            D0  A9  D0  00195         MOVL    LNK$AL_IMGRAB+12, STVCODE                    : 0463
                          26                56  E8  00199         BLBS    RMSERROR, 14$                                : 0464
                          7E                56  7D  0019C  13$:   MOVQ    RMSERROR, -(SP)                              : 0468
            7E 00000000G  00                14  C1  0019F         ADDL3   #20, LNK$GL_IMGFIL, -(SP)                    : 0467
                                            01  DD  001A7         PUSHL   #1                                           :
                                 00000000G  8F  DD  001A9         PUSHL   #LIN$_OPENOUT                                :
                  00000000G  00             05  FB  001AF         CALLS   #5, LIB$SIGNAL                               :
                                        F8  A8  DD  001B6         PUSHL   IMGAUXFNB                                    : 0470
                  00000000V  EF             01  FB  001B9         CALLS   #1, LNK$CLOSYMOUT                            :
                                            0A  11  001C0         BRB     15$                                          : 0471
                         FB  A9            00G  90  001C2  14$:   MOVB    S^LNK$C_OBJMBC, LNK$AL_IMGRAB+55             : 0475
                         EC  A9             68  D0  001C6         MOVL    OBJRECORD, LNK$AL_IMGRAB+40                  : 0476
                                            05  11  001CA         BRB     16$                                          : 0447
                                        F4  A8  D5  001CC  15$:   TSTL    STBFILEIFI                                   : 0479
                                            34  13  001CF         BEQL    17$                                          :
                  00000000V  EF             00  FB  001D1  16$:   CALLS   #0, HDRECSOUT                                : 0481
                          2A                50  E9  001D8         BLBC    R0, 17$                                      :
                                 00000000'  EF  9F  001DB         PUSHAB  ABSPSECT                                     : 0484
                  00000000V  EF             01  FB  001E1         CALLS   #1, PSECTRECOUT                              :
                          1A                50  E9  001E8         BLBC    R0, 17$                                      :
                  00000000V  EF             00  FB  001EB         CALLS   #0, OUTPUTPSECTS                             : 0489
                  00000000V  EF             00  FB  001F2         CALLS   #0, EOMRECOUT                                : 0494
```

```
                                  09           50  E9 001F9          BLBC     R0, 17$                                  ;
                                               7E  D4 001FC          CLRL     -(SP)                                    ; 0496
                        00000000V EF           01  FB 001FE          CALLS    #1, LNK$CLOSYMOUT                        ;
                                                   04 00205 17$:     RET                                               ; 0498

; Routine Size:  518 bytes,    Routine Base:  $CODE$ + 0000
```

```
  1 routine hdrecsout =
  2 begin
  2 !
  2 ! THIS ROUTINE OUTPUTS MODULE HEADER RECORDS TJ THE
  2 ! SYMBOL TABLE FILE.
  2 !
  2 bind    mhdrec          = .objrecord : block [,byte];
  2
  2 own     datecntrl       : descriptor('!17%D!17%D'),
  2         linknamever     : descriptor ('VAX-11 Linker V!AD-!AD');
  2
  2 literal filenamelen     =  9,
  2         datefieldlen    = 17,
  2         maj_ident_lng   =  2,
  2         min_ident_lng   =  2;
  2
  2 local   filename        : ref block[,byte],
  2         modheadfield    : ref vector[,byte],
  2         datefield       : vector [2],
  2         reclng          : word;
  2
  2 bind    bufferdesc      = datefield : vector;
  2 !
  2 if  (filename = .imgauxfnb) neq 0                                      ! SETUP DEFAULT MODULE FNB
  3 then begin
  3      if  .imgauxfnb [nam$b_name] eql 0                                 ! IF IMAGE NAME IS NULL
  3      and .stbauxfnb neq 0                                              ! AND .STB EXITS,
  3      then filename = .stbauxfnb;                                       ! USE .STB NAME
  3      end
  2 else filename = .stbauxfnb;                                            ! USE .STB NAME IF NO IMAGE
  2
  2 objrecord [obj$b_rectyp] = obj$c_hdr;                                  ! SET RECORD TYPE
  2 mhdrec [mhd$b_hdrtyp]    = obj$c_hdr_mhd;                              ! AND HEADER SUB-TYPE
  2 mhdrec [mhd$b_strlvl]    = obj$c_strlvl;                               ! SET STRUCTURE LEVEL
  2 mhdrec [mhd$w_recsiz]    = maxsymbolrec;                               ! SET MAX RECORD LENGTH
  2 mhdrec [mhd$b_namlng]    = .filename [nam$b_name];                     ! SET MODULE NAME LENGTH
  2
  2 modheadfield = ch$move  (.mhdrec [mhd$b_namlng]
  2                         ,.filename [nam$l_name]                        ! AND COPY THE NAME, SETTING
  2                         , mhdrec [mhd$t_name]                          ! POINTER TO NEXT FIELD
  2                         ) ;
  2
  2 modheadfield [0] = .lnk$gt_imgid [0];                                  ! SET LENGTH OF IDENT
  2 datefield [1]    = ch$move (.modheadfield [0],lnk$gt_imgid [1],modheadfield [1]); ! COPY IN THE IDENT
  2 datefield [0]    = 2 * datefieldlen;                                   ! SET UP DESCRIPTOR FOR DATE
  2
P 2 if not $fao (datecntrl, reclng, datefield                              ! FIELDS AND CALL FAO TO
P 2         ,lnk$gq_startim, lnk$gq_startim                                ! CONVERT AND MOVE IN DATE AND TIME
  3         )
  3 then begin
  3      signal (lin$_faofail);                                            ! GIVE UP WITH MESSAGE IF AN ERROR
  3      return false;
  2      end;
  2
  2 reclng = .reclng + .modheadfield [0] + .mhdrec [mhd$b_namlng] + 2 +    ! COMPUTE TOTAL RECORD
  2         mhdrec [mhd$b_namlng] - objrecord [obj$b_rectyp];              ! LENGTH
  2
```

```
;  445          0556  2 if not outputrec (.reclng)                                                      ! AND OUTPUT THE
;  446          0557  2 then return false;                                                              ! RECORD
;  447          0558  2
;  448          0559  2 !
;  449          0560  2 ! NOW BUILD THE RECORD WITH LINKER'S NAME AND VERSION.
;  450          0561  2 !
;  451          0562  2
;  452          0563  2 objrecord [obj$b_subtyp] = obj$c_hdr_lnm;                                       ! CREATOR ID HEADER
;  453          0564  2 bufferdesc [0]           = maxsymbolrec;                                        ! SET LENGTH AND
;  454          0565  2 bufferdesc [1]           = objrecord [obj$b_subtyp]+1;                          ! ADDRESS AND FAO
;  455        P 0566  2 if not $fao (linknamever, reclng, bufferdesc, maj_ident_lng                     ! FILLS IN THE RECORD.
;  456        P 0567  2          .lnk$aw_version [lid$w_major], min_ident_lng                           ! WITH MAJOR AND MINOR
;  457        P 0568  2          .lnk$aw_version [lid$w_minor]                                          ! LINKER IDENT
;  458          0569  3          )
;  459          0570  3 then begin                                                                      ! REPORT FAO ERROR
;  460          0571  3      signal (lin$_faofail);
;  461          0572  3      return false;                                                              ! AND GIVE UP
;  462          0573  2      end;
;  463          0574  2
;  464          0575  2 reclng = .reclng+.bufferdesc [1]-objrecord [obj$b_rectyp];                      ! COMPUTE RECORD LENGTH
;  465          0576  2 return outputrec (.reclng)                                                      ! OUTPUT THE RECORD AND RETURN STATU
;  466          0577  1 end;



                                                                   .PSECT  $PLIT$,NOWRT,NOEXE,2

                                                     0004B         .BLKB   1
               00  00  44  25  37  31  21  44  25  37  31  21  0004C P.AAC:  .ASCII  \!17%D!17%D\<0><0>                        ;
56  20  72  65  6B  6E  69  4C  20  31  31  2D  58  41  56  00058 P.AAD:  .ASCII  \VAX-11 Linker V!AD-!AD\<0><0>            ;
                   00  00  44  41  21  2D  44  41  21  00067                                                                   ;

                                                                   .PSECT  $OWN$,NOEXE,2

                                        0000000A  00064 DATECNTRL:
                                                                   .LONG   10
                                        00000000' 00068            .ADDRESS P.AAC                                              ;
                                        00000016  0006C LINKNAMEVER:
                                                                   .LONG   22                                                  ;
                                        00000000' 00070            .ADDRESS P.AAD                                              ;

                                                                   .EXTRN  SYS$FAO

                                                                   .PSECT  $CODE$,NOWRT,2

                                            OFFC 00000 HDRECSOUT:
                                                                   .WORD   Save R2,R3,R4,R5,R6,R7,R8,R9,R10,R11                ; 0499
                            5B 00000000V   EF  9E 00002            MOVAB   OUTPUTREC, R11                                      ;
                            5A 00000000G   00  9E 00009            MOVAB   SYS$FAO, R10                                        ;
                            59 00000000G   00  9E 00010            MOVAB   LNK$GQ_STARTIM, R9                                  ;
                            58 00000000'   EF  9E 00017            MOVAB   OBJRECORD, R8                                       ;
                            5E             0C  C2 0001E            SUBL2   #12, SP                                             ;
                            52             68  D0 00021            MOVL    OBJRECORD, R2                                       ; 0505
                            56             52  D0 00024            MOVL    R2, R6                                              ;
                            50        F8   A8  D0 00027            MOVL    IMGAUXFNB, R0                                       ; 0522
                            51             50  D0 0002B            MOVL    R0, FILENAME                                        ;
                                           0A  13 0002E            BEQL    1$                                                  ;
                            3B  A0 95 00030      TSTB    59(R0)                                  ; 0524
                                09 12 00033      BNEQ    2$                                      ;
                            A4  A8 D5 00035      TSTL    STBAUXFNB                               ; 0525
                                04 13 00038      BEQL    2$                                      ;
               51           A4  A8 D0 0003A 1$:  MOVL    STBAUXFNB, FILENAME                     ; 0528
                                62 94 0003E 2$:  CLRB    (R2)                                    ; 0530
               01  A6 02000000  8F D0 00040      MOVL    #33554432, 1(R6)                        ; 0531
               05  A6       3B  A1 90 00048      MOVB    59(FILENAME), 5(R6)                     ; 0534
               50           05  A6 9A 0004D      MOVZBL  5(R6), R0                               ; 0536
06  A6         4C  B1           50 28 00051      MOVC3   R0, @76(FILENAME), 6(R6)                ; 0538
                   57           53 D0 00057      MOVL    R3, MODHEADFIELD                        ;
                   67 00000000G 00 90 0005A      MOVB    LNK$GT_IMGID, (MODHEADFIELD)            ; 0541
                   50           67 9A 00061      MOVZBL  (MODHEADFIELD), R0                      ; 0542
01  A7 00000000G   00           50 28 00064      MOVC3   R0, LNK$GT_IMGID+1, 1(MODHEADFIELD)     ;
               08  AE           53 D0 0006D      MOVL    R3, DATEFIELD+4                         ;
               04  AE           22 D0 00071      MOVL    #34, DATEFIELD                          ; 0543
                                59 DD 00075      PUSHL   R9                                      ; 0547
                                59 DD 00077      PUSHL   R9                                      ;
                            0C  AE 9F 00079      PUSHAB  DATEFIELD                               ;
                            0C  AE 9F 0007C      PUSHAB  RECLNG                                  ;
                            04  A8 9F 0007F      PUSHAB  DATECNTRL                               ;
                   6A           05 FB 00082      CALLS   #5, SYS$FAO                             ;
                   54           50 E9 00085      BLBC    R0, 3$                                  ;
                   50           6E 3C 00088      MOVZWL  RECLNG, R0                              ; 0553
                   51           67 9A 0008B      MOVZBL  (MODHEADFIELD), R1                      ;
                   50           51 C0 0008E      ADDL2   R1, R0                                  ;
                   51       05  A6 9A 00091      MOVZBL  5(R6), R1                               ;
                   50           51 C0 00095      ADDL2   R1, R0                                  ;
                   50           56 C0 00098      ADDL2   R6, R0                                  ;
                   50           68 C2 0009B      SUBL2   OBJRECORD, R0                           ; 0554
    6E             50           07 A1 0009E      ADDW3   #7, R0, RECLNG                          ;
                   7E           6E 3C 000A2      MOVZWL  RECLNG, -(SP)                           ; 0556
                   6B           01 FB 000A5      CALLS   #1, OUTPUTREC                           ;
                   52           50 E9 000A8      BLBC    R0, 5$                                  ;
                   50           68 D0 000AB      MOVL    OBJRECORD, R0                           ; 0563
               01  A0           01 90 000AE      MOVB    #1, 1(R0)                               ;
               04  AE     0200  8F 3C 000B2      MOVZWL  #512, BUFFERDESC                        ; 0564
               08  AE       02  A0 9E 000B8      MOVAB   2(R0), BUFFERDESC+4                     ; 0565
                      00000000G 00 9F 000BD      PUSHAB  LNK$AW_VERSION+2                        ; 0569
                                02 DD 000C3      PUSHL   #2                                      ;
                      00000000G 00 9F 000C5      PUSHAB  LNK$AW_VERSION                          ;
                                02 DD 000CB      PUSHL   #2                                      ;
                            14  AE 9F 000CD      PUSHAB  BUFFERDESC                              ;
                            14  AE 9F 000D0      PUSHAB  RECLNG                                  ;
                            0C  A8 9F 000D3      PUSHAB  LINKNAMEVER                             ;
                   6A           07 FB 000D6      CALLS   #7, SYS$FAO                             ;
                   0F           50 E8 000D9      BLBS    R0, 4$                                  ;
                      00000000G 8F DD 000DC 3$:  PUSHL   #LIN$_FAOFAIL                           ; 0571
       00000000G   00           01 FB 000E2      CALLS   #1, LIB$SIGNAL                          ;
                                12 11 000E9      BRB     5$                                      ; 0572
                   50           6E 3C 000EB 4$:  MOVZWL  RECLNG, R0                              ; 0575
                   50       08  AE C0 000EE      ADDL2   BUFFERDESC+4, R0                        ;
    6E             50           68 A3 000F2      SUBW3   OBJRECORD, R0, RECLNG                   ;
                   7E           6E 3C 000F6      MOVZWL  RECLNG, -(SP)                           ; 0576
                   6B           01 FB 000F9      CALLS   #1, OUTPUTREC                           ;
                                   04 000FC      RET                                             ;
                                50 D4 000FD 5$:  CLRL    R0                                      ; 0577
```

```
                                              04 000FF         RET                                          ;

; Routine Size:  256 bytes,    Routine Base:  $CODE$ + 0206

;  467           0578  1
;   469          0579  1 routine eomrecout =
;   470          0580  2 begin
;   471          0581  2 !
;   472          0582  2 ! THIS ROUTINE BUILDS AND OUTPUTS AN END OF MODULE RECORD
;   473          0583  2 !
;   474          0584  2 objrecord [obj$b_rectyp] = obj$c_eom;                                    ! SET RECORD TYPE
;   475          0585  2 objrecord [eom$b_comcod] = .eomcodes [minu (eom$c_abort,.lnk$gb_maxercod)]; ! AND ERROR CODE
;   476          0586  2 return outputrec (eom$c_eommin);                                          ! AND OUTPUT IT
;   477          0587  1 end;



                                           0000 00000 EOMRECOUT:
                                                              .WORD   Save nothing                                   ; 0579
                         51 00000000'  EF   D0 00002          MOVL    OBJRECORD, R1                                  ; 0584
                         61            03   90 00009          MOVB    #3, (R1)                                       ;
                         50 00000000G  00   9A 0000C          MOVZBL  LNK$GB_MAXERCOD, R0                            ; 0585
                         03            50   91 00013          CMPB    R0, #3                                         ;
                                       03   1B 00016          BLEQU   1$                                             ;
                         50            03   D0 00018          MOVL    #3, R0                                         ;
                    01   A1 00000000'EF40   90 0001B 1$:      MOVB    EOMCODES[R0], 1(R1)                            ;
                                       02   DD 00024          PUSHL   #2                                             ; 0586
                00000000V EF           01   FB 00026          CALLS   #1, OUTPUTREC                                  ;
                                            04 0002D          RET                                                    ; 0587

; Routine Size:  46 bytes,    Routine Base:  $CODE$ + 0306
```

```
1 routine outputpsects =
2 begin
2 !
2 ! THIS ROUTINE OUTPUTS THE PSECTS TO THE SYMBOL TABLE
2 !
2 routine psect_out(node) =
3 begin
3 !
3 ! THIS ROUTINE IS CALLED BY LIB$TRAVERSE_TREE FOR EACH PSECT IN THE
3 ! MAPPING LIST
3 !
3 !
3 ! THE SYMBOLS IN THE SYMBOL TABLE ARE ALL LINKED ON A (SINGLY THREADED) LIST FROM
3 ! THE PROGRAM SECTIONS WITHIN WHICH THE SYMBOLS WERE DEFINED. THEREFORE TO FIND
3 ! ALL SYMBOLS, WE SCAN DOWN THE LINKED LIST OF P-SECTION DESCRIPTORS, THEN DOWN
3 ! THE LIST OF SYMBOLS STRUNG OFF EACH P-SECTION DESCRIPTOR.
3 !
3 map
3     node        : ref block [,byte];
3
3 bind
3     psectdesc   = node  [node$l_ptr]         : ref block [,byte],
3     cludesc     = psectdesc [psc$l_cludsc] : ref block [,byte];
3
3 local
3         symdesc : ref block [,byte],                           ! POINTER TO SYMBOL DESCRIPTOR
3         pscoutflg,                                             ! FLAG IF PSECT WAS OUTPUT TO SYMBOL FILE
3         savpscnum;                                             ! SAVED PSECT NUMBER
3
3 if  .lnk$gl_ctlmsk [lnk$v_shr]                                 ! IF MAKING A SHAREABLE IMAGE
3 and .cludesc [clu$v_shrimg]                                    !  AND THIS CLUSTER IS ANOTHER SHAREABLE IMA
3 then return true;                                              !  THEN SKIP THIS CLUSTER
3
3 if .lnk$gl_ctlmsk [lnk$v_shr]                                  ! IF SHAREABLE IMAGE
4 and (.psectdesc [psc$w_flags] and (gps$m_rel or gps$m_gbl or gps$m_ovr )) ! AND PSECT IS RELOCATABLE,
4       eql                     (gps$m_rel or gps$m_gbl or gps$m_ovr )  !  GLOBAL, OVERLAYED
4 then begin
4      pscoutflg   = true;                                       ! PSECT WAS OUTPUT
4      curpsectnum = .curpsectnum + 1;                           ! INCREMENT P-SECTION NUMBER
4      if not psectrecout(.psectdesc)                            ! OUTPUT THE P-SECTION
4      then return true;                                         ! RETURNING ON ERROR
4      end
4 else begin
4      pscoutflg  =  false;                                      ! FLAG PSECT NOT OUTPUT
4      savpscnum  = .curpsectnum;                                ! SAVE THE PSECT NUMBER
4     curpsectnum =  0;                                          ! DEFINE THE SYMBOLS IN THE ABSOLUTE PSECT
4     end;
3 if (symdesc = .psectdesc [psc$l_symlst]) neq 0                 ! IF THERE ARE SYMBOLS
3 then do if (.symdesc [sym$w_flags] and .symask) eql .symatch   ! THAT QUALIFY FOR OUTPUT
4         then begin
4              if .symdesc [sym$v_redef]                         ! IF FLAGGED FOR RE-DEFINITION
5              then begin
5                   symdesc [sym$l_value] = .symdesc [sym$l_newval];      ! THEN RE-DEFINE VALUE
5                   if  .lnk$gl_ctlmsk [lnk$v_picimg]                     ! IF IMAGE IS STILL PIC
5                   and .symdesc [sym$v_rerel]                            !  AND THIS SYMBOL SHOULD BE
5                   then symdesc [sym$v_rel] = true;                      !  RELOCATABLE THEN MAKE IT SO
4                   end;
```

```
;  536        0645 4
;  537        0646 4              if  .lnk$gl_ctlmsk [lnk$v_picimg]                          ! IF A PIC IMAGE
;  538        0647 4              and .lnk$gl_ctlmsk [lnk$v_shr]                             ! AND A SHAREABLE IMAGE
;  539        0648 4              and .symdesc [sym$v_rel]                                   ! AND SYMBOL IS RELOCATABLE
;  540        0649 4              then symdesc [sym$l_value] = .symdesc [sym$l_value] -      ! MAKE IT IMAGE RELATIVE
;  541        0650 4                                           .lnk$gl_minva
;  542        0651 4              else symdesc [sym$v_rel] = false;                          ! THEN SYMBOL IS ABSOLUTE
;  543        0652 4
;  544        0653 4             if .symdesc [sym$v_intsym]                                  ! IF INTERNAL SYMBOL
;  545        0654 4             or .symdesc [sym$v_def]                                     ! OR DEFINED
;  546        0655 4             then if not symrecout(.symdesc)                             ! THEN OUTPUT THE SYMBOL
;  547        0656 4                 then return true;                                       ! GIVING UP ON AN ERROR
;  548        0657 4             end
;  549        0658 3       until (symdesc = .symdesc [sym$l_psclst]) eql 0;                  ! ON FAILURE
;  550        0659 3
;  551        0660 3 if not .pscoutflg
;  552        0661 3 then curpsectnum = .savpscnum;                                     ! RESTORE PSECT NUMBER IF NECESSARY
;  553        0662 3
;  554        0663 3 return true
;  555        0664 2 end;



                                    00FC 00000 PSECT_OUT:
                                                         .WORD   Save R2,R3,R4,R5,R6,R7                          ; 0593
                57 00000000G   00  9E 00002              MOVAB   LNK$GL_CTLMSK, R7                               ;
                56 00000000'   EF  9E 00009              MOVAB   CURPSECTNUM, R6                                 ;
         50       04  AC           0A  C1 00010              ADDL3   #10, NODE, R0                                   ; 0609
                      52           60  D0 00015              MOVL    (R0), R2                                        ; 0610
  51     67           01           02  EF 00018              EXTZV   #2, #1, LNK$GL_CTLMSK, R1                       ; 0617
                      2F           51  E9 0001D              BLBC    R1, 2$                                          ;
                      50      24   A2  D0 00020              MOVL    36(R2), R0                                      ; 0618
         24       58  A0           02  E0 00024              BBS     #2, 88(R0), 1$                                  ;
                      23           51  E9 00029              BLBC    R1, 2$                                          ; 0621
                      50      0A   A2  3C 0002C              MOVZWL  10(R2), R0                                      ; 0622
                      50 FFFFFFE3  8F  CA 00030              BICL2   #-29, R0                                        ;
                      1C           50  D1 00037              CMPL    R0, #28                                         ; 0623
                                   13  12 0003A              BNEQ    2$                                              ;
                      53           01  D0 0003C              MOVL    #1, PSCOUTFLG                                   ; 0625
                                   66  96 0003F              INCB    CURPSECTNUM                                     ; 0626
                                   52  DD 00041              PUSHL   R2                                              ; 0627
           00000000V  EF           01  FB 00043              CALLS   #1, PSECTRECOUT                                 ;
                      09           50  E8 0004A              BLBS    R0, 3$                                          ;
                                   72  11 0004D 1$:          BRB     11$                                             ; 0628
                                   53  D4 0004F 2$:          CLRL    PSCOUTFLG                                       ; 0631
                      54           66  9A 00051              MOVZBL  CURPSECTNUM, SAVPSCNUM                          ; 0632
                                   66  94 00054              CLRB    CURPSECTNUM                                     ; 0633
                      52      14   A2  D0 00056 3$:          MOVL    20(R2), SYMDESC                                 ; 0635
                                   5F  13 0005A              BEQL    10$                                             ;
                      50      0A   A2  9E 0005C 4$:          MOVAB   10(SYMDESC), R0                                 ; 0636
                      51           60  3C 00060              MOVZWL  (R0), R1                                        ;
                      55      EE   A6  3C 00063              MOVZWL  SYMASK, R5                                      ;
                      55           55  D2 00067              MCOML   R5, R5                                          ;
                      51           55  CA 0006A              BICL2   R5, R1                                          ;
                  F2  A6           51  D1 0006D              CMPL    R1, SYMATCH                                     ;
```

```
                                                     42  12 00071       BNEQ    9$                                          ;
                    11         60                    0C  E1 00073       BBC     #12, (R0), 5$                               ; 0638
                               62         10         A2  D0 00077       MOVL    16(SYMDESC), (SYMDESC)                      ; 0640
                    1E     02  A7                    01  E1 0007B       BBC     #1, LNK$GL_CTLMSK+2, 6$                     ; 0641
                    03     0C  A2                    02  E1 00080       BBC     #2, 12(SYMDESC), 5$                         ; 0642
                               60                    08  88 00085       BISB2   #8, (R0)                                    ; 0643
                    11     02  A7                    01  E1 00088 5$:   BBC     #1, LNK$GL_CTLMSK+2, 6$                     ; 0646
                    0D         67                    02  E1 0008D       BBC     #2, LNK$GL_CTLMSK, 6$                       ; 0647
                    09         60                    03  E1 00091       BBC     #3, (R0), 6$                                ; 0648
                               62 00000000G          00  C2 00095       SUBL2   LNK$GL_MINVA, (SYMDESC)                     ; 0650
                                                     03  11 0009C       BRB     7$                                          ; 0649
                               60                    08  8A 0009E 6$:   BICB2   #8, (R0)                                    ; 0651
                    04         60                    0A  E0 000A1 7$:   BBS     #10, (R0), 8$                               ; 0653
                    0C         60                    01  E1 000A5       BBC     #1, (R0), 9$                                ; 0654
                                                     52  DD 000A9 8$:   PUSHL   SYMDESC                                     ; 0655
                       00000000V  EF                 01  FB 000AB       CALLS   #1, SYMRECOUT                               ;
                               0C                    50  E9 000B2       BLBC    R0, 11$                                     ;
                               52         04         A2  D0 000B5 9$:   MOVL    4(SYMDESC), SYMDESC                         ; 0658
                                                     A1  12 000B9       BNEQ    4$                                          ;
                               03                    53  E8 000BB 10$:  BLBS    PSCOUTFLG, 11$                              ; 0660
                               66                    54  90 000BE       MOVB    SAVPSCNUM, CURPSECTNUM                      ; 0661
                               50                    01  D0 000C1 11$:  MOVL    #1, R0                                      ; 0663
                                                         04 000C4       RET                                                 ; 0664

; Routine Size:  197 bytes,    Routine Base:  $CODE$ + 0334


;    556          0665  2 !
;    557          0666  2 ! MAIN BODY OF OUTPUTPSECTS
;    558          0667  2 !
;    559          0668  2 if not .lnk$gl_ctlmsk [lnk$v_shr]
;    560          0669  2 then symask = .symask or gsy$m_weak                            ! IF NOT SHAREABLE, EXCLUDE WEAK SYMBOLS
;    561          0670  3 else begin
;    562          0671  3      symatch = gsy$m_uni;                                     ! IF SHAREABLE, SYMBOLS MUST BE UNIVERSAL
;    563          0672  3      symask = .symask or gsy$m_uni;
;    564          0673  2    end;
;    565          0674  2 !
;    566          0675  2 ! TRAVERSE THE TREE AND OUTPUT THE PSECTS
;    567          0676  2 !
;    568          0677  2 lib$traverse_tree (lnk$gl_maplst,psect_out);
;    569          0678  2
;    570          0679  2 return outputrec (.gsdreclng)                                    ! RETURN, OUTPUTTING ANY PARTIAL RECORD
;    571          0680  1 end;                                                            !OF OUTPUTPSECTS



                                                    0004 00000 OUTPUTPSECTS:
                                                                        .WORD   Save R2                                     ; 0588
                               52 00000000'          EF  9E 00002       MOVAB   SYMASK, R2                                  ;
                    05 00000000G  00                 02  E0 00009       BBS     #2, LNK$GL_CTLMSK, 1$                       ; 0668
                               62                    01  88 00011       BISB2   #1, SYMASK                                  ; 0669
                                                     07  11 00014       BRB     2$                                          ;
                           04  A2                    04  D0 00016 1$:   MOVL    #4, SYMATCH                                 ; 0671
                               62                    04  88 0001A       BISB2   #4, SYMASK                                  ; 0672
                                        FF1A         CF  9F 0001D 2$:   PUSHAB  PSECT_OUT                                   ; 0677
```

```
                                                      L 13
LNK_SYMTBLOUT                                      16-Sep-1984 00:34:39    VAX-11 Bliss-32 V4.0-742              Page  21
V04-000                                            14-Sep-1984 12:40:37    [LINKER.SRC]LNKSYMOUT.B32;1                 (6)

                                   000000000G  00  9F 00021         PUSHAB  LNK$GL_MAPLST                       ;
                      00000000G  00            02  FB 00027         CALLS   #2, LIB$TRAVERSE_TREE               ;
                                 7E        10  A2  3C 0002E         MOVZWL  GSDRECLNG, -(SP)                    ; 0679
                      00000000V  EF            01  FB 00032         CALLS   #1, OUTPUTREC                       ;
                                               04  00039            RET                                         ; 0680

; Routine Size:  58 bytes,    Routine Base:  $CODE$ + 03F9
```

```
1 routine stbpscrecout(psectdesc) =
2 begin
2 !
2 ! THIS ROUTINE OUTPUTS A PSECT DEFINITION RECORD TO THE STB FILE.
2 !
2 map
2     psectdesc : ref block[,byte];
2
2 local
2     psectdefrec : ref block[,byte];
2
2 if  .stbfileifi eql 0                                             ! IF NO STB FILE
2 and .psectdesc [psc$v_rel]                                        !  AND PSECT IS RELOCATABLE
2 then return true;                                                 !  THEN JUST SKIP IT
2
2 if .gsdreclng gtru 0                                              ! FLUSH BUFFER
3 then begin
3      if not outputrec (.gsdreclng)                                ! WRITE IT OUT
3      then return false;                                           ! AND ZERO THE LENGTH
3      gsdreclng = 0;
2      end;
2
2 if .gsdreclng eql 0                                               ! IF BEGINNING A NEW
3 then begin                                                        ! GSD RECORD, SET
3      objrecord [obj$b_rectyp] = obj$c_gsd;                        ! RECORD TYPE AND INITIALIZE
3      gsdreclng = 1;                                               ! THE LENGTH
2      end;
2
2 psectdefrec = objrecvec [.gsdreclng];                             ! POINT TO P-SECTION PART OF RECORD
2 psectdefrec [gps$b_gsdtyp] = gsd$c_psc;                           ! SET SUBRECORD TYPE
2 psectdefrec [gps$b_align]  = .psectdesc [psc$b_align];            ! COPY ALIGNMENT
2 psectdefrec [gps$w_flags]  = .psectdesc [psc$w_flags]             ! COPY FLAGS,
3                      and not (psc$m_optpsc or psc$m_usrpsc or   ! AND CLEAR UNINTERESTING BITS
3                                   psc$m_supres or psc$m_shrimg
2                                  );
2 psectdefrec [gps$l_alloc]  = .psectdesc [psc$l_base];             ! SET ALLOCATION AS PSECT BASE
2 psectdefrec [gps$b_namlng] = .psectdesc [psc$b_namlng];           ! COPY LENGTH OF NAME
2
2 gsdreclng = .gsdreclng + ch$move (.psectdesc [psc$b_namlng]       ! AND THEN THE NAME AND UPDATE
2                                  , psectdesc [psc$t_name]         ! LENGTH OF GSD RECORD
2                                  , psectdefrec [gps$t_name]
2                                  ) - .psectdefrec;
2
2 if  .imgauxfnb neq 0                                              ! IF ALSO WRITING TO IMAGE FILE
2 and .psectdefrec [gps$v_rel]                                      !  AND THIS IS A RELOCATABLE PSECT
3 then begin
3      stbrecout (.gsdreclng);                                      ! THEN OUTPUT THE RECORD TO THE STB FILE
3      gsdreclng = 0;
2      end;
2
2 return true
1 end;
```

```
                                                            01FC 00000 STBPSCRECOUT:
                                                                             .WORD    Save R2,R3,R4,R5,R6,R7,R8                  ; 0681
                                      58 00000000'    EF    9E 00002         MOVAB    GSDRECLNG, R8                              ;
                                                F8    A8    D5 00009         TSTL     STBFILEIFI                                 ; 0692
                                                      09    12 0000C         BNEQ     1$                                         ;
                                      50        04    AC    D0 0000E         MOVL     PSECTDESC, R0                              ; 0693
                     69         0A    A0              03    E0 00012         BBS      #3, 10(R0), 4$                             ;
                                      50              68    3C 00017 1$:     MOVZWL   GSDRECLNG, R0                              ; 0696
                                                      10    13 0001A         BEQL     2$                                         ;
                                                      50    DD 0001C         PUSHL    R0                                         ; 0698
                           00000000V  EF              01    FB 0001E         CALLS    #1, OUTPUTREC                              ;
                                      5C              50    E9 00025         BLBC     R0, 5$                                     ;
                                                      68    B4 00028         CLRW     GSDRECLNG                                  ; 0700
                                                      07    12 0002A         BNEQ     3$                                         ; 0703
                                04    B8              01    90 0002C 2$:     MOVB     #1, @OBJRECORD                             ; 0705
                                      68              01    B0 00030         MOVW     #1, GSDRECLNG                              ; 0706
                                      57              68    3C 00033 3$:     MOVZWL   GSDRECLNG, R7                              ; 0709
                     56               57        04    A8    C1 00036         ADDL3    OBJRECVEC, R7, PSECTDEFREC                 ;
                                                      66    94 0003B         CLRB     (PSECTDEFREC)                              ; 0710
                                      50        04    AC    D0 0003D         MOVL     PSECTDESC, R0                              ; 0711
                                01    A6        2C    A0    90 00041         MOVB     44(R0), 1(PSECTDEFREC)                     ;
                02   A6         0A    A0      3C00    8F    AB 00046         BICW3    #15360, 10(R0), 2(PSECTDEFREC)             ; 0713
                                04    A6        18    A0    D0 0004E         MOVL     24(R0), 4(PSECTDEFREC)                     ; 0716
                                08    A6        2D    A0    90 00053         MOVB     45(R0), 8(PSECTDEFREC)                     ; 0717
                                      51        2D    A0    9A 00058         MOVZBL   45(R0), R1                                 ; 0719
                09   A6         2E    A0              51    28 0005C         MOVC3    R1, 46(R0), 9(PSECTDEFREC)                 ; 0721
                     50               57              53    C1 00062         ADDL3    R3, R7, R0                                 ; 0719
                     68               50              56    A3 00066         SUBW3    PSECTDEFREC, R0, GSDRECLNG                 ; 0722
                                                FC    A8    D5 0006A         TSTL     IMGAUXFNB                                  ; 0724
                                                      11    13 0006D         BEQL     4$                                         ;
                     0C         02    A6              03    E1 0006F         BBC      #3, 2(PSECTDEFREC), 4$                     ; 0725
                                      7E              68    3C 00074         MOVZWL   GSDRECLNG, -(SP)                           ; 0727
                           00000000V  EF              01    FB 00077         CALLS    #1, STBRECOUT                              ;
                                                      68    B4 0007E         CLRW     GSDRECLNG                                  ; 0728
                                      50              01    D0 00080 4$:     MOVL     #1, R0                                     ; 0731
                                                            04 00083         RET                                                 ;
                                                      50    D4 00084 5$:     CLRL     R0                                         ; 0732
                                                            04 00086         RET                                                 ;

; Routine Size:  135 bytes,    Routine Base:  $CODE$ + 0433
```

```
1 routine imgpscrecout(psectdesc) =
2 begin
2 !
2 ! THIS ROUTINE OUTPUTS A PSECT DEFINITION RECORD TO THE IMAGE FILE
2 !
2 map
2     psectdesc    : ref block [,byte];
2
2 local
2     psectdefrec : ref block [,byte];
2
2 if not .psectdesc [psc$v_rel]                                     ! IF PSECT IS ABSOLUTE
2 then begin
3      outputrec (.gsdreclng);                                      ! OUTPUT THE RECORD, PSECT DEF ALREADY SET U
3      gsdreclng = 0;
3      return true;
3      end;
2
2 if  .gsdreclng gtru 0                                             ! FLUSH BUFFER
2 then begin
3      if not outputrec (.gsdreclng)                                ! WRITE IT OUT
3      then return false;                                           ! AND ZERO THE LENGTH
3      gsdreclng = 0;
3      end;
2
2 if  .gsdreclng eql 0                                              ! IF BEGINNING A NEW
2 then begin                                                        ! GSD RECORD, SET
3      objrecord [obj$b_rectyp] = obj$c_gsd;                        ! RECORD TYPE AND INITIALIZE
3      gsdreclng = 1;                                               ! THE LENGTH
3      end;
2
2 psectdefrec = objrecvec [.gsdreclng];                             ! POINT TO P-SECTION PART OF RECORD
2 psectdefrec [gps$b_gsdtyp] = gsd$c_spsc;                                  ! SET SUBRECORD TYPE
2 psectdefrec [gps$b_align]  = .psectdesc [psc$b_align];            ! COPY ALIGNMENT
2 psectdefrec [gps$w_flags]  = .psectdesc [psc$w_flags]             ! COPY FLAGS,
3                               and not (psc$m_optpsc or psc$m_usrpsc or   ! AND CLEAR UNINTERESTING BITS
3                                        psc$m_supres or psc$m_shrimg
3                                       );
2 psectdefrec [sgps$l_alloc] = .psectdesc [psc$l_length];           ! SET PSECT ALLOCATION
2 psectdefrec [sgps$l_base]  = (if .lnk$gl_ctlmsk [lnk$v_picimg]    ! IF A PIC IMAGE
3                               then .psectdesc [psc$l_base] -      ! THEN RECORD BASE AS IMAGE RELATIVE
3                                        .lnk$gl_minva
3                               else .psectdesc [psc$l_base]        ! OTHERWISE ACTUAL ADDRESS
2                              );
2
2 psectdefrec [sgps$b_namlng] = .psectdesc [psc$b_namlng];          ! SET LENGTH OF NAME
2
2 gsdreclng = .gsdreclng + ch$move (.psectdesc [psc$b_namlng]       ! COPY THE P-SECTION NAME
2                                  , psectdesc [psc$t_name]         ! AND UPDATE RECORD LENGTH
2                                  , psectdefrec [sgps$t_name]
2                                  ) - .psectdefrec;
2
2 if .stbfileifi neq 0                                              ! IF ALSO WRITING STB FILE
2 then begin
3     imgrecout (.gsdreclng);                                       ! THEN OUTPUT THE RECORD
3     gsdreclng = 0;
2     end;
```

```
;  683          0790  2
;  684          0791  2 return true
;  685          0792  1 end;



                                              03FC 00000 IMGPSCRECOUT:
                                                                     .WORD    Save R2,R3,R4,R5,R6,R7,R8,R9               ; 0733
                             59 00000000V   EF    9E 00002          MOVAB    OUTPUTREC, R9                              ;
                             58 00000000'   EF    9E 00009          MOVAB    GSDRECLNG, R8                              ;
                             52        04   AC    D0 00010          MOVL     PSECTDESC, R2                              ; 0744
             08        0A    A2             03    E0 00014          BBS      #3, 10(R2), 1$                             ;
                             7E             68    3C 00019          MOVZWL   GSDRECLNG, -(SP)                           ; 0746
                             69             01    FB 0001C          CALLS    #1, OUTPUTREC                              ;
                             76             11       0001F          BRB      6$                                         ; 0747
                             50             68    3C 00021 1$:      MOVZWL   GSDRECLNG, R0                              ; 0751
                             0C             13       00024          BEQL     2$                                         ;
                             50             DD       00026          PUSHL    R0                                         ; 0753
                             69             01    FB 00028          CALLS    #1, OUTPUTREC                              ;
                             6F             50    E9 0002B          BLBC     R0, 8$                                     ;
                             68             B4       0002E          CLRW     GSDRECLNG                                  ; 0755
                             07             12       00030          BNEQ     3$                                         ; 0758
                     04      B8             01    90 00032 2$:      MOVB     #1, @OBJRECORD                             ; 0760
                             68             01    B0 00036          MOVW     #1, GSDRECLNG                              ; 0761
                             57             68    3C 00039 3$:      MOVZWL   GSDRECLNG, R7                              ; 0764
             56              57        04   A8    C1 0003C          ADDL3    OBJRECVEC, R7, PSECTDEFREC                 ;
                             66             0C    90 00041          MOVB     #12, (PSECTDEFREC)                         ; 0765
                     01      A6        2C   A2    90 00044          MOVB     44(R2), 1(PSECTDEFREC)                     ; 0766
      02     A6      0A      A2      3C00   8F    AB 00049          BICW3    #15360, 10(R2), 2(PSECTDEFREC)             ; 0768
                     04      A6        1C   A2    D0 00051          MOVL     28(R2), 4(PSECTDEFREC)                     ; 0771
             0B 00000000G    00             01    E1 00056          BBC      #1, LNK$GL_CTLMSK+2, 4$                    ; 0772
             50      18      A2 00000000G   00    C3 0005E          SUBL3    LNK$GL_MINVA, 24(R2), R0                   ; 0774
                                            04    11 00067          BRB      5$                                         ; 0773
                             50        18   A2    D0 00069 4$:      MOVL     24(R2), R0                                 ; 0775
                     08      A6             50    D0 0006D 5$:      MOVL     R0, 8(PSECTDEFREC)                         ; 0772
                     0C      A6        2D   A2    90 00071          MOVB     45(R2), 12(PSECTDEFREC)                    ; 0778
                             50        2D   A2    9A 00076          MOVZBL   45(R2), R0                                 ; 0780
      0D     A6      2E      A2             50    28 0007A          MOVC3    R0, 46(R2), 13(PSECTDEFREC)                ; 0782
             50              57             53    C1 00080          ADDL3    R3, R7, R0                                 ; 0780
             68              50             56    A3 00084          SUBW3    PSECTDEFREC, R0, GSDRECLNG                 ; 0783
                                       F8   A8    D5 00088          TSTL     STBFILEIFI                                 ; 0785
                                            0C    13 0008B          BEQL     7$                                         ;
                             7E             68    3C 0008D          MOVZWL   GSDRECLNG, -(SP)                           ; 0787
                00000000V    EF             01    FB 00090          CALLS    #1, IMGRECOUT                              ;
                                            68    B4 00097 6$:      CLRW     GSDRECLNG                                  ; 0788
                             50             01    D0 00099 7$:      MOVL     #1, R0                                     ; 0791
                                                  04 0009C          RET                                                 ;
                                            50    D4 0009D 8$:      CLRL     R0                                         ; 0792
                                                  04 0009F          RET                                                 ;

; Routine Size:  160 bytes,    Routine Base:  $CODE$ + 04BA
;  687         0793  1 routine psectrecout(psectdesc) =
;  688         0794  2 begin
;  689         0795  2 !
;  690         0796  2 ! THIS ROUTINE OUTPUTS A P-SECTION DEFINITION RECORD. IT ASSUMES THAT GSD
;  691         0797  2 ! RECORDS ARE BEING WRITTEN AND BLOCKED UP. IF ANOTHER P-SECTION DEFINITION
;  692         0798  2 ! RECORD WILL NOT FIT IN THE CURRENT GSD RECORD, THE RECORD IS WRITTEN
;  693         0799  2 ! AND ANOTHER BEGUN.
;  694         0800  2 !
;  695         0801  2 map
;  696         0802  2     psectdesc : ref block[,byte];                          ! BLOCK POINTER
;  697         0803  2
;  698         0804  2 stbpscrecout(.psectdesc);                                  ! OUTPUT TO STB FILE
;  699         0805  2
;  700         0806  2 if  .imgauxfnb neq 0                                       ! IF WRITING TO IMAGE FILE
;  701         0807  2 then imgpscrecout (.psectdesc);                            !  THEN OUTPUT TO IMAGE FILE
;  702         0808  2
;  703         0809  2 return true                                                ! AND ALL DONE.
;  704         0810  1 end;



                                          0000 00000 PSECTRECOUT:
                                                          .WORD   Save nothing                              ; 0793
                                 04    AC  DD 00002       PUSHL   PSECTDESC                                 ; 0804
                  FECF   CF            01  FB 00005       CALLS   #1, STBPSCRECOUT                          ;
                          00000000'    EF  D5 0000A       TSTL    IMGAUXFNB                                 ; 0806
                                       08  13 00010       BEQL    1$                                        ;
                                 04    AC  DD 00012       PUSHL   PSECTDESC                                 ; 0807
                  FF46   CF            01  FB 00015       CALLS   #1, IMGPSCRECOUT                          ;
                         50            01  D0 0001A 1$:   MOVL    #1, R0                                    ; 0809
                                           04 0001D       RET                                               ; 0810

; Routine Size:  30 bytes,    Routine Base:  $CODE$ + 055A
```

```
1 routine symrecout (symdesc) =
2 begin
2 !
2 ! THIS ROUTINE BLOCKS SYMBOL DEFINITION RECORDS INTO GSD RECORDS
2 ! AND OUTPUTS THEM TO THE SYMBOL TABLE.
2 !
2 map symdesc : ref block[,byte];
2 local   symdefrec : ref block[,byte],
2         symbolstring : ref vector[,byte],
2         valdatlng,                          ! LENGTH OF ARG VALIDATION DATA
2         masklength;
2 bind symdscnam = .symdesc - .symdesc[sym$b_namlng] - snb$c_fxdlen : block[,byte]; ! POINT TO NAME PART
2 if (.symdesc[sym$w_flags] and sym$m_entmsk) neq 0                  ! IF THERE IS AN ENTRY
2 then masklength = 2                                               ! MASK, SET THE EXTRA
2 else masklength = 0;                                              ! LENGTH
2 if .symdesc[sym$l_valdata] neq 0                                  ! IF THERE IS VALIDATION DATA
3 then begin
3     bind
3         argvaldata = symdesc[sym$l_valdata] : ref vector[,byte];   ! NAME IT
3     valdatlng = (.argvaldata[0]-2)*2 + 2;                         ! GET LENGTH OF VALIDATION INFORMATI
3     end
2 else valdatlng = 0;                                               ! OTHERWISE THERE IS NONE
3 if (.gsdreclng+.masklength+.symdesc[sym$b_namlng]+.valdatlng+     ! IF THIS SYMBOL WOULD
2                       sdf$c_name) gtru maxsymbolrec                ! OVERFLOW THE CURRENT
3 then begin                                                        ! RECORD, THEN OUTPUT
3         if not outputrec(.gsdreclng)                              ! CURRENT RECORD AND
3         then return false;                                        ! EXIT ON ERROR
3         gsdreclng = 0;                                            ! RESET RECORD LENGTH
2     end;
2 if .gsdreclng eql 0                                               ! SET NEW RECORD AS A
3 then begin
3         objrecord[obj$b_rectyp] = obj$c_gsd;                      ! GSD RECORD
3         gsdreclng = 1;
2     end;
2 symdefrec = objrecvec [.gsdreclng];                               ! SET POINTER TO SYMBOL
2 if .valdatlng neq 0                                               ! IF THERE IS VALIDATION DATA
3 then begin
3     bind
3         argvaldata = symdesc[sym$l_valdata] : ref vector[,byte],   ! POINT TO VALIDATION DATA
3         formaldata = symdefrec[pro$t_name]+
3                     .symdesc[sym$b_namlng] : block[,byte];         ! POINTER TO THE FIXED PART OF FORMA
3     symdefrec[pro$w_mask] = .symdesc[sym$w_entmsk];               ! SET THE ENTRY MASK
3     symbolstring = symdefrec[pro$b_namlng];                       ! POINT TO THE NAME
3     symdefrec[pro$b_gsdtyp] = obj$c_gsd_pro;                      ! PROCEDURE DEFINITION
3     formaldata[fml$b_minargs] = .argvaldata[1];                   ! SET MINIMUM ARG COUNT
3     formaldata[fml$b_maxargs] = .argvaldata[0] - 2;               ! AND MAXIMUM
3     incr i from 1 to .formaldata[fml$b_maxargs]                   ! LOOP THROUGH THE ARGUMENTS
4     do begin
4         bind
4             argdesc =
4                 formaldata[fml$b_maxargs]+1+((.i-1)*arg$c_size) : block[,byte]; ! POINT TO CURRENT ARG DESCR
4         argdesc[arg$b_valctl] = .(argvaldata[1] + .i);            ! GET NEXT DESCRIPTOR
4         argdesc[arg$b_bytecnt] = 0;                               ! NO OTHER DESCRIPTOR BYTES
3         end;
3     end
2 else if .masklength neq 0
3 then begin                                                        ! TO SYMBOL NAME
```

```
;   763        0868 3          symdefrec[epm$w_mask]=.symdesc[sym$w_entmsk];             ! STRING AND IF AN
;   764        0869 3          symbolstring = symdefrec[epm$b_namlng];                   ! ENTRY POINT DEFINITION
;   765        0870 3          symdefrec[epm$b_gsdtyp] = obj$c_gsd_epm                   ! SET THE GSD TYPE
;   766        0871 3      end                                                           ! ALSO COPY THE ENTRY
;   767        0872 3  else begin                                                        ! POINT MASK
;   768        0873 3          symbolstring = symdefrec[sdf$b_namlng];                   ! DO LIKEWISE FOR
;   769        0874 3          symdefrec[sdf$b_gsdtyp] = obj$c_gsd_sym;                  ! ORDINARY SYMBOL
;   770        0875 2      end;                                                          ! DEFINITION
;   771        0876 2  symdefrec[sdf$b_datyp] = .symdesc[sym$b_datyp];                   ! COPY DATA TYPE
;   772        0877 3  symdefrec[sdf$w_flags] = .symdesc[sym$w_flags] and (gsy$m_rel or  ! AND FLAGS
;   773        0878 2                          gsy$m_weak or gsy$m_uni or gsy$m_def);
;   774        0879 2  if not .symdesc[sym$v_rel]                                        ! IF ABSOLUTE P-SECTION
;   775        0880 2      then symdefrec[sdf$b_psindx] = 0                              ! SET OWNING P-SECT NUMBER = 0
;   776        0881 2      else symdefrec[sdf$b_psindx] = .curpsectnum;                  ! SET OWNING P-SECT
;   777        0882 2  symdefrec[sdf$l_value] = .symdesc[sym$l_value];                   ! SYMBOL VALUE
;   778        0883 2  gsdreclng = .gsdreclng+ch$move(.symdscnam[snb$b_namlng]+1,        ! COPY THE SYMBOL
;   779        0884 2                  symdscnam[snb$b_namlng],symbolstring[0])-         ! NAME (COUNTED STRING)
;   780        0885 2                  .symdefrec+.valdatlng;                            ! AND UPDATE LENGTH
;   781        0886 2  return true;                                                      ! AND IT IS ALL
;   782        0887 1  end;                                                              ! DONE.



                                       0FFC 00000 SYMRECOUT:
                                                       .WORD   Save R2,R3,R4,R5,R6,R7,R8,R9,R10,R11        ; 0811
                   5B 00000000'   EF  9E 00002         MOVAB   GSDRECLNG, R11                               ;
                   54          04 AC  D0 00009         MOVL    SYMDESC, R4                                  ; 0822
                   52          0F A4  9A 0000D         MOVZBL  15(R4), R2                                   ;
          50       54             52  C3 00011         SUBL3   R2, R4, R0                                   ;
                   59          FB A0  9E 00015         MOVAB   -5(R0), R9                                   ;
                               0A A4  B5 00019         TSTW    10(R4)                                       ; 0823
                                  05  18 0001C         BGEQ    1$                                           ;
                   53             02  D0 0001E         MOVL    #2, MASKLENGTH                               ; 0824
                                  02  11 00021         BRB     2$                                           ;
                                  53  D4 00023 1$:     CLRL    MASKLENGTH                                   ; 0825
                               18 A4  D5 00025 2$:     TSTL    24(R4)                                       ; 0826
                                  0C  13 00028         BEQL    3$                                           ;
                   57          18 B4  9A 0002A         MOVZBL  @24(R4), R7                                  ; 0830
                   57             02  C4 0002E         MULL2   #2, VALDATLNG                                ;
                   57             02  C2 00031         SUBL2   #2, VALDATLNG                                ;
                                  02  11 00034         BRB     4$                                           ; 0826
                                  57  D4 00036 3$:     CLRL    VALDATLNG                                    ; 0832
                   51             6B  3C 00038 4$:     MOVZWL  GSDRECLNG, R1                                ; 0833
          50       51             53  C1 0003B         ADDL3   MASKLENGTH, R1, R0                           ;
                   50             52  C0 0003F         ADDL2   R2, R0                                       ;
                   50       0A A740   9E 00042         MOVAB   10(VALDATLNG)[R0], R0                        ;
      00000200     8F             50  D1 00047         CMPL    R0, #512                                     ; 0834
                                  11  1B 0004E         BLEQU   6$                                           ;
                                  51  DD 00050         PUSHL   R1                                           ; 0836
      00000000V    EF             01  FB 00052         CALLS   #1, OUTPUTREC                                ;
                   03             50  E8 00059         BLBS    R0, 5$                                       ;
                                00A6  31 0005C         BRW     15$                                          ;
                                  6B  B4 0005F 5$:     CLRW    GSDRECLNG                                    ; 0838
                                  6B  B5 00061 6$:     TSTW    GSDRECLNG                                    ; 0840
                                  07  12 00063         BNEQ    7$                                           ;
```

```
                          04  BB           01 90 00065       MOVB     #1, @OBJRECORD                      ; 0842
                              6B           01 B0 00069       MOVW     #1, GSDRECLNG                       ; 0843
                              58           6B 3C 0006C 7$:   MOVZWL   GSDRECLNG, R8                       ; 0845
                    56        58     04    AB C1 0006F       ADDL3    OBJRECVEC, R8, SYMDEFREC            ;
                                           57 D5 00074       TSTL     VALDATLNG                           ; 0846
                                           38 13 00076       BEQL     10$                                 ;
                              51     0C  A246 9E 00078       MOVAB    12(R2)[SYMDEFREC], R1               ; 0850
                          09  A6     08    A4 B0 0007D       MOVW     8(R4), 9(SYMDEFREC)                 ; 0852
                              50     0B    A6 9E 00082       MOVAB    11(R6), SYMBOLSTRING                ; 0853
                              66           03 90 00086       MOVB     #3, (SYMDEFREC)                     ; 0854
                              53     18    A4 D0 00089       MOVL     24(R4), R3                          ; 0855
                              61     01    A3 90 0008D       MOVB     1(R3), (R1)                         ;
                01  A1        63           02 83 00091       SUBB3    #2, (R3), 1(R1)                     ; 0856
                              5A     01    A1 9A 00096       MOVZBL   1(R1), R10                          ; 0857
                                           52 D4 0009A       CLRL     I                                   ;
                                           0C 11 0009C       BRB      9$                                  ;
                              55         6142 3E 0009E 8$:   MOVAW    (R1)[I], R5                         ; 0861
                              65     01  A243 90 000A2       MOVB     1(I)[R3], (R5)                      ; 0862
                                     01    A5 94 000A7       CLRB     1(R5)                               ; 0863
                    F0        52           5A F3 000AA 9$:   AOBLEQ   R10, I, 8$                          ; 0857
                                           19 11 000AE       BRB      12$                                 ; 0846
                                           53 D5 000B0 10$:  TSTL     MASKLENGTH                          ; 0866
                                           0E 13 000B2       BEQL     11$                                 ;
                          09  A6     08    A4 B0 000B4       MOVW     8(R4), 9(SYMDEFREC)                 ; 0868
                              50     0B    A6 9E 000B9       MOVAB    11(R6), SYMBOLSTRING                ; 0869
                              66           02 90 000BD       MOVB     #2, (SYMDEFREC)                     ; 0870
                                           07 11 000C0       BRB      12$                                 ;
                              50     09    A6 9E 000C2 11$:  MOVAB    9(SYMDEFREC), SYMBOLSTRING          ; 0873
                              66           01 90 000C6       MOVB     #1, (SYMDEFREC)                     ; 0874
                          01  A6     0E    A4 90 000C9 12$:  MOVB     14(R4), 1(SYMDEFREC)                ; 0876
        51      0A  A4        04           00 EF 000CE       EXTZV    #0, #4, 10(R4), R1                  ; 0877
                          02  A6           51 B0 000D4       MOVW     R1, 2(SYMDEFREC)                    ;
                    05    0A  A4           03 E0 000D8       BBS      #3, 10(R4), 13$                     ; 0879
                                     04    A6 94 000DD       CLRB     4(SYMDEFREC)                        ; 0880
                                           05 11 000E0       BRB      14$                                 ;
                          04  A6     02    AB 90 000E2 13$:  MOVB     CURPSECTNUM, 4(SYMDEFREC)           ; 0881
                          05  A6           64 D0 000E7 14$:  MOVL     (R4), 5(SYMDEFREC)                  ; 0882
                              51     04    A9 9A 000EB       MOVZBL   4(R9), R1                           ; 0883
                                           51 D6 000EF       INCL     R1                                  ;
                    60    04  A9           51 28 000F1       MOVC3    R1, 4(R9), (SYMBOLSTRING)           ; 0884
                    50        58           53 C1 000F6       ADDL3    R3, R8, R0                          ; 0883
                              50           56 C2 000FA       SUBL2    SYMDEFREC, R0                       ; 0885
                    6B        50           57 A1 000FD       ADDW3    VALDATLNG, R0, GSDRECLNG            ;
                              50           01 D0 00101       MOVL     #1, R0                              ; 0886
                                              04 00104       RET                                          ;
                                           50 D4 00105 15$:  CLRL     R0                                  ; 0887
                                              04 00107       RET                                          ;

; Routine Size:  264 bytes,    Routine Base:  $CODE$ + 0578
;  784          0888  1 routine stbrecout(reclng) =
;  785          0889  2 begin
;  786          0890  2 !
;  787          0891  2 !      THIS ROUTINE WRITES TO THE STB FILE IF ONE IS BEING CREATED
;  788          0892  2 !
;  789          0893  2 !      RECLNG          LENGTH OF RECORD TO WRITE
;  790          0894  2 !
;  791          0895  2 local
;  792          0896  2     rmserror;
;  793          0897  2
;  794          0898  2 if .reclng neq 0                             ! IF NON-ZERO LENGTH RECORD
;  795          0899  2     and .stbfileifi neq 0                    ! AND WE ARE WRITING TO THE STB FILE
;  796          0900  3 then begin
;  797          0901  3     stbrab[rab$w_rsz] = .reclng;             ! SET RECORD LENGTH
;  798          0902  4     if not (rmserror = $put(rab=stbrab))     ! WRITE THE RECORD
;  799          0903  4     then begin
;  800          0904  4         signal(lin$_writeerr,1,              ! SIGNAL ANY ERRORS
;  801          0905  4                 lnk$gl_symfil[fdb$q_filename],
;  802          0906  4                 .rmserror,.stbrab[rab$l_stv]);
;  803          0907  4         lnk$closymout(.stbauxfnb);           ! CLOSE THE FILE IF ERROR
;  804          0908  4         if .imgauxfnb eql 0                  ! IF NO IMAGE FILE BEING CREATED
;  805          0909  4             then return false;               !  THEN ALL DONE NOW
;  806          0910  4         end
;  807          0911  3     else lnk$gw_symrecs = .lnk$gw_symrecs + 1;  ! COUNT GOOD RECORD WRITTEN TO THE FILE
;  808          0912  2     end;
;  809          0913  2
;  810          0914  2 return true
;  811          0915  1 end;



                                                           .EXTRN  SYS$PUT

                                   0004 00000 STBRECOUT:
                                                           .WORD   Save R2                                ; 0888
                   52 00000000'   EF   9E 00002            MOVAB   STBFILEIFI, R2                         ;
                              04  AC   D5 00009            TSTL    RECLNG                                 ; 0898
                                  49   13 0000C            BEQL    2$                                     ;
                                  62   D5 0000E            TSTL    STBFILEIFI                             ; 0899
                                  45   13 00010            BEQL    2$                                     ;
            D6    A2          04  AC   B0 00012            MOVW    RECLNG, STBRAB+34                      ; 0901
                              B4  A2   9F 00017            PUSHAB  STBRAB                                 ; 0902
              00000000G   00      01   FB 0001A            CALLS   #1, SYS$PUT                            ;
                          2D      50   E8 00021            BLBS    RMSERROR, 1$                           ;
                              C0  A2   DD 00024            PUSHL   STBRAB+12                              ; 0906
                                  50   DD 00027            PUSHL   RMSERROR                               ;
           7E 00000000G   00      14   C1 00029            ADDL3   #20, LNK$GL_SYMFIL, -(SP)              ; 0905
                                  01   DD 00031            PUSHL   #1                                     ;
                        00000000G 8F   DD 00033            PUSHL   #LIN$_WRITEERR                         ;
              00000000G   00      05   FB 00039            CALLS   #5, LIB$SIGNAL                         ;
                              B0  A2   DD 00040            PUSHL   STBAUXFNB                              ; 0907
              00000000V   EF      01   FB 00043            CALLS   #1, LNK$CLOSYMOUT                      ;
                              04  A2   D5 0004A            TSTL    IMGAUXFNB                              ; 0908
                                  08   12 0004D            BNEQ    2$                                     ;
                                  0A   11 0004F            BRB     3$                                     ; 0909
                        00000000' EF   B6 00051 1$:        INCW    LNK$GW_SYMRECS                         ; 0911
                   50             01   D0 00057 2$:        MOVL    #1, R0                                 ; 0914
```

```
                                        04 0005A         RET                                        ;
                                     50 D4 0005B 3$:     CLRL    R0                                 ; 0915
                                        04 0005D         RET                                        ;

; Routine Size:  94 bytes,    Routine Base:  $CODE$ + 0680
```

```
                                                      J 14
LNK_SYMTBLOUT                                         16-Sep-1984 00:34:39    VAX-11 Bliss-32 V4.0-742                  Page  32
V04-000                                               14-Sep-1984 12:40:37    [LINKER.SRC]LNKSYMOUT.B32;1                   (12)

;   813          0916  1 routine imgrecout(reclng) =
;   814          0917  2 begin
;   815          0918  2 !
;   816          0919  2 !      THIS ROUTINE WRITES TO THE IMAGE FILE
;   817          0920  2 !
;   818          0921  2 !      RECLNG          LENGTH OF RECORD
;   819          0922  2 !
;   820          0923  2 local
;   821          0924  2     rmserror;
;   822          0925  2
;   823          0926  2 if .reclng neq 0                                 ! IF NON-ZERO LENGTH
;   824          0927  2     and .imgauxfnb neq 0                         ! AND IMAGE FILE IS OPEN
;   825          0928  3 then begin
;   826          0929  3     lnk$al_imgrab[rab$w_rsz] = .reclng;          ! SET RECORD LENGTH
;   827          0930  4     if not (rmserror = $put(rab = lnk$al_imgrab)) ! WRITE THE RECORD
;   828          0931  4     then begin
;   829          0932  4         signal(lin$_writeerr,1,                  ! IF ERROR, REPORT AND CLOSE FILE
;   830          0933  4                 lnk$gl_imgfi[[fdb$q_filename],
;   831          0934  4                 .rmserror,.lnk$al_imgrab[rab$l_stv]);
;   832          0935  4         lnk$closymout(.imgauxfnb);
;   833          0936  4         if .stbfileifi eql 0                     ! IF NO STB FILE BEING CREATED
;   834          0937  4             then return false;                   !  THEN ALL DONE NOW
;   835          0938  4         end
;   836          0939  3     else lnk$gw_gstrecs = .lnk$gw_gstrecs + 1;   ! COUNT GOOD RECORD WRITTEN
;   837          0940  2     end;
;   838          0941  2
;   839          0942  2 return true
;   840          0943  1 end;



                                            000C 00000 IMGRECOUT:
                                                              .WORD   Save R2,R3                          ; 0916
                      53 00000000'  EF   9E 00002             MOVAB   IMGAUXFNB, R3                       ;
                      52 00000000G  00   9E 00009             MOVAB   LNK$AL_IMGRAB+34, R2                ;
                                04  AC   D5 00010             TSTL    RECLNG                              ; 0926
                                    47   13 00013             BEQL    2$                                  ;
                                    63   D5 00015             TSTL    IMGAUXFNB                           ; 0927
                                    43   13 00017             BEQL    2$                                  ;
                      62        04  AC   B0 00019             MOVW    RECLNG, LNK$AL_IMGRAB+34            ; 0929
                                DE  A2   9F 0001D             PUSHAB  LNK$AL_IMGRAB                       ; 0930
             00000000G  00          01   FB 00020             CALLS   #1, SYS$PUT                         ;
                        2C          50   E8 00027             BLBS    RMSERROR, 1$                        ;
                                EA  A2   DD 0002A             PUSHL   LNK$AL_IMGRAB+12                    ; 0934
                                    50   DD 0002D             PUSHL   RMSERROR                            ;
          7E 00000000G  00          14   C1 0002F             ADDL3   #20, LNK$GL_IMGFIL, -(SP)           ; 0933
                                    01   DD 00037             PUSHL   #1                                  ;
                         00000000G  8F   DD 00039             PUSHL   #LIN$_WRITEERR                      ;
             00000000G  00          05   FB 0003F             CALLS   #5, LIB$SIGNAL                      ;
                                    63   DD 00046             PUSHL   IMGAUXFNB                           ; 0935
             00000000V  EF          01   FB 00048             CALLS   #1, LNK$CLOSYMOUT                   ;
                                FC  A3   D5 0004F             TSTL    STBFILEIFI                          ; 0936
                                    08   12 00052             BNEQ    2$                                  ;
                                    0A   11 00054             BRB     3$                                  ; 0937
                         00000000'  EF   B6 00056 1$:         INCW    LNK$GW_GSTRECS                      ; 0939
```

```
                              50          01  D0 0005C 2$:      MOVL    #1, R0                                        ; 0942
                                              04 0005F          RET                                                   ;
                                          50  D4 00060 3$:      CLRL    R0                                            ; 0943
                                              04 00062          RET                                                   ;

; Routine Size:  99 bytes,    Routine Base:  $CODE$ + 05DE
;  842         0944  1 routine outputrec(reclng) =
;  843         0945  2 begin
;  844         0946  2 !
;  845         0947  2 !       THIS ROUTINE HANDLES THE ACTUAL RECORD OUTPUT TO THE
;  846         0948  2 !       FILE(S) RECEIVING SYMBOL TABLE RECORDS.  ERROR DETECTION
;  847         0949  2 !       OCCURS HERE BUT THE HANDLING IS DONE IN THE FILE CLOSING
;  848         0950  2 !       ROUTINE.
;  849         0951  2 !
;  850         0952  2 if not stbrecout(.reclng)
;  851         0953  2     then return false;
;  852         0954  2
;  853         0955  2 return imgrecout(.reclng)
;  854         0956  1 end;



                                                  0000 00000 OUTPUTREC:
                                                                     .WORD    Save nothing                                   ; 0944
                                          04   AC   DD 00002         PUSHL    RECLNG                                         ; 0952
                       FF35   CF               01   FB 00005         CALLS    #1, STBRECOUT                                  ;
                              08               50   E9 0000A         BLBC     R0, 1$                                         ;
                                          04   AC   DD 0000D         PUSHL    RECLNG                                         ; 0955
                         89   AF               01   FB 00010         CALLS    #1, IMGRECOUT                                  ;
                                                    04 00014         RET                                                     ;
                                               50   D4 00015 1$:     CLRL     R0                                             ; 0956
                                                    04 00017         RET                                                     ;

; Routine Size:  24 bytes,    Routine Base:  $CODE$ + 0741
```

```
     1 global routine lnk$closymout(auxfnb) : novalue =
     2 begin
     2 !
     2 !        THIS ROUTINE HANDLES ERRORS WRITING THE SYMBOL TABLE RECORDS
     2 !        AND/OR CLOSES THE DESIRED FILE(S).
     2 !
     2 !        IF "AUXFNB" IS ZERO - BOTH FILES (IF BOTH EXIST) ARE CLOSED
     2 !        OTHERWISE "AUXFNB" IS THE ADDRESS OF THE AUXILIARY FILENAME BLOCK
     2 !        OF THE FILE ON WHICH AN ERROR OCCURRED.  THE FILE IS CLOSED.
     2 !
     2 !        WHEN OUTPUTTING RECORDS TO THE GST OF AN IMAGE, THE IMAGE FILE
     2 !        IS NOT ACTUALLY CLOSED (EXCEPT ON ERRORS). ITS ATTRIBUTES ARE MERELY
     2 !        MODIFIED (BACK TO FIXED 512 BYTE RECORD) AND IT IS LEFT OPEN SINCE
     2 !        THE IMAGE HEADER NEEDS TO BE WRITTEN AFTER THE GST IS DONE.
     2 !
     2 map      auxfnb : ref block[,byte];
     2
     2 local    fablock : block[fab$c_bln,byte],                          ! FAB FOR CLOSE AND MODIFY OPERATIONS
     2          closerror;                                                ! ERROR CODE IF CLOSE FAILS
     2
P    2 $fab_init(fab=fablock,                                             ! INITIALIZE THE FAB
     2          fop=tef);
     2
     2 if .auxfnb eql 0                                                   ! IF WE ARE CLOSING BOTH FILES
     2 or .auxfnb eql .stbauxfnb                                          ! OR THE SYMBOL TABLE FILE ONLY
     2 then if (fablock[fab$w_ifi] = .stbfileifi) neq 0                   ! IF IT IS STILL OPEN
     3 then begin
     4     if not (closerror = $close(fab=fablock))                       ! ATTEMPT TO CLOSE IT
     4     then begin
     4         signal(lin$_closeout,1,                                    ! AND OUTPUT AN ERROR IF THAT
     4                 lnk$gl_symfi[[fdb$q_filename],
     4                 .closerror,.fablock[fab$l_stv]);
     3         end;
     3     stbfileifi = 0;                                                ! AND FORGET THE FILE IN ANY CASE
     3     if .auxfnb neq 0 then return;                                  ! RETURN IF THAT WAS ALL
     2     end;
     2 if .imgauxfnb neq 0                                                ! IF SYMBOLS ARE ALSO GOING TO IMAGE
     3 then begin                                                         ! THEN SET UP TO MODIFY THE
     3     fablock[fab$w_ifi] = .lnk$gw_imgifi;                           ! THE ATTRIBUTES OF THIS FILE
     3     fablock[fab$b_rfm] = fab$c_fix;                                ! BACK TO FIXED LENGTH
     3     fablock[fab$w_mrs] = 512;                                      ! 512 BYTE RECORDS IN THE
     3     fablock[fab$v_esc] = true;                                     ! RMS DATA BASE
     3     fablock[fab$l_ctx] = rme$c_setrfm;                             ! SO THAT IT WILL HAVE
     4     if not (closerror = $modify(fab = fablock))                    ! THE ATTRIBUTES OF AN IMAGE
     4     then begin
     4         signal(lin$_closeout,1,                                    ! ISSUE MESSAGE IF MODIFY FAILED
     4                 lnk$gl_imgfi[[fdb$q_filename],
     4                 .closerror,.fablock[fab$l_stv]);
     3         end;
     3     imgauxfnb = 0;
     3     return;
     2     end;
     1 end;


                                                          .EXTRN  SYS$CLOSE
```

```
                                        01FC 00000          .ENTRY  LNK$CLOSYMOUT, Save R2,R3,R4,R5,R6,R7,R8       ; 0957
                    58 00000000G   00   9E 00002          MOVAB   LIB$SIGNAL, R8
                    57 00000000G   8F   D0 00009          MOVL    #LIN$_CLOSEOUT, R7
                    56 00000000'   EF   9E 00010          MOVAB   STBFILEIFI, R6
                    5E          B0 AE   9E 00017          MOVAB   -80(SP), SP
  0050   8F         00          6E 00   2C 0001B          MOVC5   #0, (SP), #0, #80, $RMS_PTR                    ; 0978
                                6E         00022
                    6E        5003 8F   B0 00023          MOVW    #20483, $RMS_PTR
               04   AE    10000000 8F   D0 00028          MOVL    #268435456, $RMS_PTR+4
               16   AE             02   90 00030          MOVB    #2, $RMS_PTR+22
               1F   AE             02   90 00034          MOVB    #2, $RMS_PTR+31
                    52          04 AC   D0 00038          MOVL    AUXFNB, R2                                     ; 0980
                                   06   13 0003C          BEQL    1$
               B0   A6             52   D1 0003E          CMPL    R2, STBAUXFNB                                  ; 0981
                                   34   12 00042          BNEQ    3$
                    50             66   D0 00044 1$:      MOVL    STBFILEIFI, R0                                 ; 0982
               02   AE             50   B0 00047          MOVW    R0, FABLOCK+2
                                   50   D5 0004B          TSTL    R0
                                   29   13 0004D          BEQL    3$
                                   5E   DD 0004F          PUSHL   SP                                             ; 0984
           00000000G   00          01   FB 00051          CALLS   #1, SYS$CLOSE
                       53          50   D0 00058          MOVL    R0, CLOSERROR
                       14          53   E8 0005B          BLBS    CLOSERROR, 2$
                                0C AE   DD 0005E          PUSHL   FABLOCK+12                                     ; 0988
                                   53   DD 00061          PUSHL   CLOSERROR
        7E 00000000G   00          14   C1 00063          ADDL3   #20, LNK$GL_SYMFIL, -(SP)                      ; 0987
                                   01   DD 0006B          PUSHL   #1
                                   57   DD 0006D          PUSHL   R7
                       68          05   FB 0006F          CALLS   #5, LIB$SIGNAL
                                   66   D4 00072 2$:      CLRL    STBFILEIFI                                     ; 0990
                                   52   D5 00074          TSTL    R2                                             ; 0991
                                   45   12 00076          BNEQ    5$
                                04 A6   D5 00078 3$:      TSTL    IMGAUXFNB                                      ; 0993
                                   40   13 0007B          BEQL    5$
               02   AE   00000000G 00   B0 0007D          MOVW    LNK$GW_IMGIFI, FABLOCK+2                       ; 0995
               1F   AE             01   90 00085          MOVB    #1, FABLOCK+31                                 ; 0996
               36   AE        0200 8F   B0 00089          MOVW    #512, FABLOCK+54                               ; 0997
               07   AE             08   88 0008F          BISB2   #8, FABLOCK+7                                  ; 0998
               18   AE             01   D0 00093          MOVL    #1, FABLOCK+24                                 ; 0999
                                   5E   DD 00097          PUSHL   SP                                             ; 1000
           00000000G   00          01   FB 00099          CALLS   #1, SYS$MODIFY
                       53          50   D0 000A0          MOVL    R0, CLOSERROR
                       14          53   E8 000A3          BLBS    CLOSERROR, 4$
                                0C AE   DD 000A6          PUSHL   FABLOCK+12                                     ; 1004
                                   53   DD 000A9          PUSHL   CLOSERROR
        7E 00000000G   00          14   C1 000AB          ADDL3   #20, LNK$GL_IMGFIL, -(SP)                      ; 1003
                                   01   DD 000B3          PUSHL   #1
                                   57   DD 000B5          PUSHL   R7
                       68          05   FB 000B7          CALLS   #5, LIB$SIGNAL
                                04 A6   D4 000BA 4$:      CLRL    IMGAUXFNB                                      ; 1006
                                        04 000BD 5$:      RET                                                    ; 1009

; Routine Size:  190 bytes,    Routine Base:  $CODE$ + 0759


;   909          1010  0 end eludom                                   ! END OF MODULE
```

```
                                                                                     .EXTRN  LIB$SIGNAL

;                                        PSECT SUMMARY
;
;       Name                       Bytes                        Attributes
;
;   $GLOBAL$                           4  NOVEC,  WRT,  RD ,NOEXE,NOSHR,  LCL,  REL,  CON,NOPIC,ALIGN(2)
;   $OWN$                            116  NOVEC,  WRT,  RD ,NOEXE,NOSHR,  LCL,  REL,  CON,NOPIC,ALIGN(2)
;   $PLIT$                           112  NOVEC,NOWRT,  RD ,NOEXE,NOSHR,  LCL,  REL,  CON,NOPIC,ALIGN(2)
;   $CODE$                          2071  NOVEC,NOWRT,  RD ,  EXE,NOSHR,  LCL,  REL,  CON,NOPIC,ALIGN(2)




;                              Library Statistics
;
;                                              -------- Symbols --------       Pages      Processing
;       File                                   Total    Loaded   Percent      Mapped     Time
;
;   _$255$DUA28:[SYSLIB]LIB.L32;1              18619       145         0       1000        00:01.9
;   _$255$DUA28:[LINKER.OBJ]DATBAS.L32;1         538        47         8         28        00:00.8





;                                         COMMAND QUALIFIERS

;       BLISS/CHECK=(FIELD,INITIAL,OPTIMIZE)/LIS=LIS$:LNKSYMOUT/OBJ=OBJ$:LNKSYMOUT MSRC$:LNKSYMOUT/UPDATE=(ENH$:LNKSYMOUT)

; Size:          2071 code + 232 data bytes
; Run Time:         00:39.7
; Elapsed Time:     01:30.5
; Lines/CPU Min:     1527
; Lexemes/CPU-Min: 22610
; Memory Used:  220 pages
; Compilation Complete
```

0219 AH-BT13A-SE
VAX/VMS V4.0

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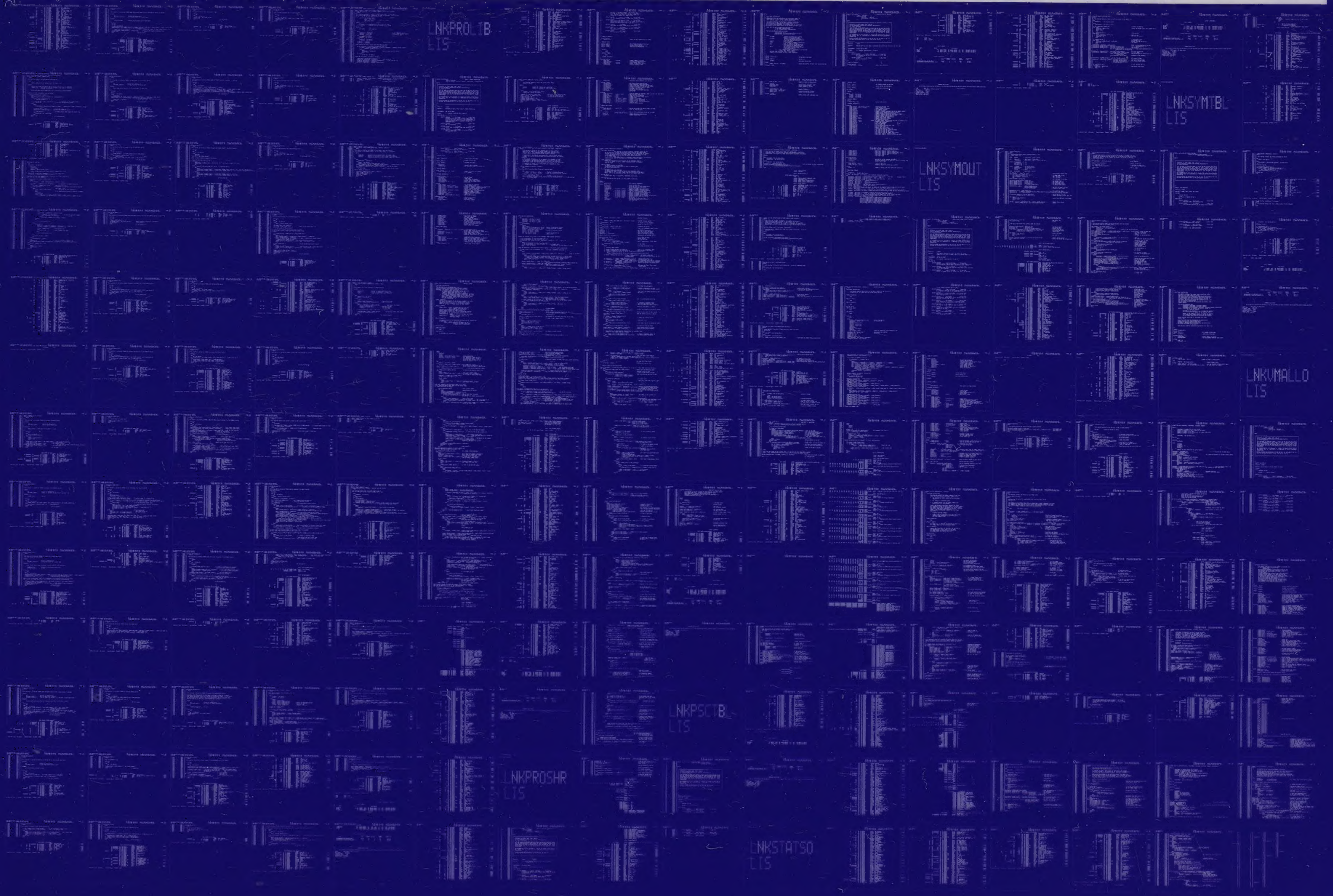

LNKPROLIB
LIS

LNKSYMTBL
LIS

LNKSYMOUT
LIS

LNKVMALLO
LIS

LNKPSCTBL
LIS

LNKPROSHR
LIS

LNKSTATSO
LIS